

CIO

Enterprise

SECTION

SEPTEMBER 15, 1999

174 PAGES IN
TWO SECTIONS

Also Inside

Q&A:
Why B-Schools
Aren't E-Schools

Page 36

Finance for Dummies
at Wharton

Page 44

beanie
babiesTeaching business executives
to give technology
a whirl Page 26

FYI

Each copy of **CIO Enterprise**
takes a cross-functional look at
leveraging information technology
to add enterprise value.
Thought you might be interested...

FROM _____

TO _____

TO _____

TO _____

Windows NTXPRT.

If you're looking for help with Windows®, look no farther. INS is a Microsoft enterprise partner for Windows and we're the largest independent provider of network services. Nobody is more qualified to deliver Windows solutions, from directory services and integrated communications to unified messaging, management and security. So call us or see our ad in this issue. We'll open your Windows ASAP.

(888) INS-8100 www.ins.com



The knowledge behind the network.™

E N T E R P R I S E P A R T N E R

Microsoft

Enterprise

S E C T I O N

SEPTEMBER 15, 1999

174 PAGES IN
TWO SECTIONS

Also Inside

Q&A:
Why B-Schools
Aren't E-Schools

Page 36

Finance for Dummies
at Wharton

Page 44

beanie babies

Teaching business executives
to give technology
a whirl

Page 26

II-E-B's Group VP Ken Hamilton, the student (right), and Edward Kramer, senior analyst and IT trainer, received high marks for the business-IT relationship that they formed.



COMPAQ

It better be, so nearly all Compaq enterprise-level servers deliver 99.99% availability, up to 99.999% in some cases. That applies to our storage systems, too. In fact, it's one reason Compaq is the

Your server is
your warehouse.

Is it working
around the clock?

enterprise storage leader, outselling #2 IBM by \$1.5 billion.* Truth is, 24/7 access to data is now a critical need, not just to your people, but to your public. For example, barnesandnoble.comSM

is now riding a 380% annual growth curve partly because, since their system was installed (10/98), there's been no significant downtime. It's a Compaq NonStop[®] e-Business Solution, and it was implemented in record time by nonstop Compaq people. To learn more, visit www.compaq.com/warehouse, contact your reseller or call 1-800-AT-COMPAQ.

Compaq StorageWorks

Our storage solutions range from server-mounted systems to modular, networked RAID arrays available 24/7 across multi-vendor IT infrastructures. We also offer an open, standards-based storage architecture that enhances performance and simplifies management of shared resources, dramatically lowering cost of ownership.

Left to right: Compaq AlphaServer, Compaq ProLiant, Compaq NonStop Himalaya



Better answers.SM



Enterprise

SECTION

VOL. 12 • NO. 23 • SEPTEMBER 15, 1999 • 174 PAGES IN 2 SECTIONS
SECTION 2

Features

26 Nerd Makers

COVER STORY: I.S.-BUSINESS PARTNERS How executives at a major grocery chain learned that tech proficiency makes great business sense. *By Daintry Duffy*

36 Degrees of Separation

HIGHER EDUCATION Wanted: Business school professors who can teach electronic commerce. Real-world knowledge preferred. *By Carol Hildebrand*

44 Piggy Bank U

EXECUTIVE EDUCATION A week-long crash course may be the only thing standing between you and a firm grasp of the finer points of finance. *By Perry Glasser*

56 Chain Safety

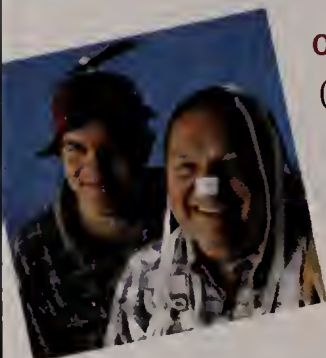
SUPPLY CHAIN MANAGEMENT

Ten precautions to heed when refining your supply chain.

By Gary Abramson



ON THE COVER Edward Kramer (left) taught Dan Hamilton everything he knows about IT.





WHERE BUSINESS AND TECHNOLOGY **SPARK GROWTH.**

Announcing CustomerConnectsm from CSC. The knowledge-driven sales, service and marketing solution for growth.

At CSC, we understand that it takes a blend of business and technology to fuel business results. With 40 years of experience, CSC manages this critical convergence with unparalleled precision.

Now, with CustomerConnect, we bring together the growth strategy,

enabling technologies and e-business expertise you need most – seamless back-to-front office integration that fully empowers you to acquire, develop and maintain your most profitable customers.

For solutions that energize long-term growth, talk to CSC. You'll find us at the intersection of business and technology. The address is www.csc.com/cio2. Or talk to Patrick Holmes at 1-800-272-0018.



Computer Sciences Corporation



Powerful. Presenting the Portégé® 3110CT notebook. Inside its ultra-thin, ultra-light case, Toshiba gives you the performance edge of an Intel® Pentium® II processor 300MHz, a 6.4 billion-byte hard drive and 64MB of high-speed SDRAM. That's just what it takes to handle a heavy workload on the run with an ultraportable PC that won't weigh you down.



Productive. Portégé 3110CT comes equipped with a brilliant 10.4" dia. Poly-silicon TFT color display and an innovative touch type keyboard with a comfortable, full-size feel. An integrated V.90/K56flex modem* provides high-speed communications. And a battery lasting over 3 hours** lets you get more done, more easily than ever. Of course you'll also have Toshiba's dependable 24/7 support.



Pure power.
Pure portability.
Pure precision.



Flexible Expansion. Link to your network with built-in 10/100 Ethernet capabilities. Access the optional CD-ROM, and tap into the rest of your office resources with a standard Network I/O Adapter that gives you easy, one-touch connections to your existing peripherals. A maximum 128MB memory capacity also leaves room to grow for tomorrow's demanding tasks.



Ultra-thin. Ultra-light. The innovative technology of the Portégé 3110CT is evident even before you open it. Under 1" thin and barely 3 lbs. light, its sculpted magnesium-alloy case is engineered for protection as well as sophistication. Discover the pure power, portability and precision of the Portégé 3110CT for yourself. Call **1-800-TOSHIBA** or click on **www.toshiba.com**.

TOSHIBA

The World's Best Selling Portable Computers.



Columns

- 22 e-EEK**
REALITY BYTES The business world is e-volving e-normously. *By Cassandra*
- 24 Fedders' Sal Giordano Jr.**
EXECUTIVE SUITE Technology keeps his company afloat. *By Carol Hildebrand*
- 68 Does KM = IT?**
INTELLECTUAL CAPITALISM A dangerous idea could retard your KM efforts. *By Carol Hildebrand*
- 70 Nixing the Naysayers**
CHECKS & BALANCES Dealing with execs who believe IT investments are unproductive. *By Glenn M. Miller*
- 74 Stand and Deliver**
HANDSHAKE IT takes the guesswork out of scheduling home deliveries at Sears. *By Daintry Duffy*
- 82 What Is ATM?**
LEARNING CURVE ATM promises high reliability, but it's complex and expensive. *By Tom Wailgum*

Departments

- 8 Contributor's Page**
- 10 In My Opinion**
Letter from Joseph L. Levy •
On our Web site
- 14 Plugged In**
'Cause I'm the Taxman • Cruise Musings • Labor Pains •
Quantifying KM • A College Is Born
- 78 CIO Portfolio**
Products, programs and previews from CIO
Communications Inc.
- 80 Index**



22



Inside Section 1

COVER STORY: CHANGING

BUSINESS MODELS Once upon a time, selling cars was a matter of personal relationships and negotiation. Then the Web arrived.

PROJECT MANAGEMENT Successfully juggling all the elements in complex IT projects takes more than experience and gut instinct. It takes metrics.

HUMAN RESOURCES Duke Energy's CIO used the HR department to put his human capital first.

EXECUTIVE COUNSEL A pair of CIOs discuss the pleasures and pains of starting from scratch.

META VIEW Without CIO leadership, IT's business value can go unrealized.

EMERGING TECHNOLOGY Metadirectories consolidate islands of information for easier updating.

SHOP TALK The NRTC's Jim Gibbons on business collaboration.

PEOPLESOFT HAS
eBUSINESS APPLICATIONS.

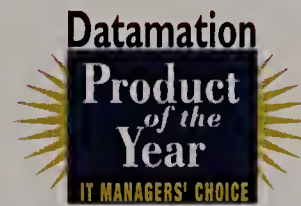
PEOPLESOFT HAS
eBUSINESS APPLICATIONS.

PEOPLESOFT HAS
eBUSINESS APPLICATIONS.



Just so you know.

100% Internet. PeopleSoft applications are built for the Internet. We specialize in cutting edge eBusiness applications—like PeopleSoft eProcurement and PeopleSoft eStore, which enable your employees and customers to buy and sell online, easily and efficiently. PeopleSoft builds the applications that help your company work on the Internet.



Datamation Product of the Year,
1998 and 1999.



Applications for eBusiness™

www.peoplesoft.com

888.773.8277

Re: Managing Me Inc.

CORPORATE LOYALTY IS DEAD. Or if it hasn't yet kicked the bucket, it's wheezing on life support in a dark room devoid of mourners. After a few rounds of reengineering, downsizing or being merged or acquired into corporate oblivion, only a snail might not be swift enough to see that we all are the president, chairman and CEO of a company called Me Inc.

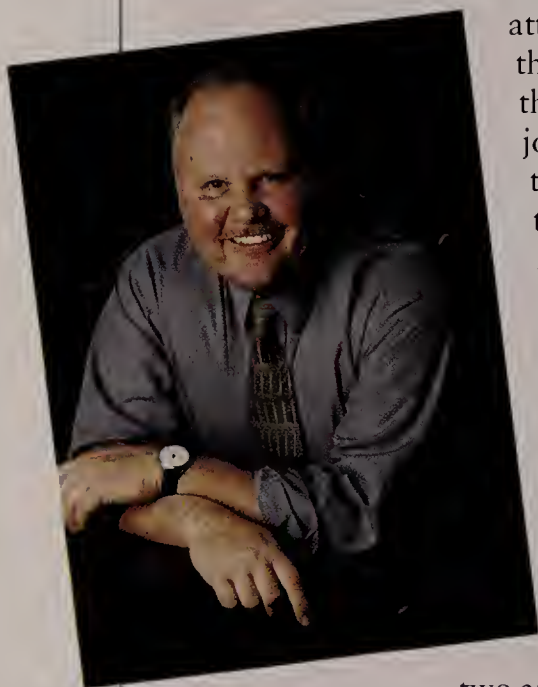
To augment their worth and marketability, activist managers of Me Inc. are turning to continuing education courses such as Wharton's "Accounting and Finance for the Nonfinancial Manager" (see "Piggy Bank U," Page 44).

Although most executives attend such courses on their companies' dimes, they have no compunction about applying what they've learned at another company when a better job beckons. The demands of the board of directors at Me Inc. leave no room for loyalty, a virtue that's to be found only in the Boy Scout oath and is expected only of household pets. After all, the past decade has taught us that if financial advantage warrants it, our employers are prepared to pack up the office and leave us behind.

In today's enterprise, the kinds of personal bonds that once existed between individuals and institutions seem quaint. Look long and hard at your own assumptions. Do you view an inscribed gold watch given for 30 years of service as an enviable award or is it merely the sign of a career that was likely dull as dirt? If

two applicants' resumes were before you, and one showed progressive movement from company to company while the other showed job changes only because of career duress—a merger or acquisition—which applicant would you define as the go-getter?

We've certainly lost something, and I'm not at all sure that what we've gained—being the boss at Me Inc.—is so worth having. It can be a little lonely at the top.



Perry Glasser

Perry Glasser, Senior Writer
glasser@cio.com

**Has loyalty
become a virtue
to be found only
in the Boy Scout
oath?**



© CIO Communications, Inc.

Founder Joseph L. Levy

Publisher Gary J. Beach

Editorial Director Lew McCreary

EDITORIAL

Editor in Chief Abbie Lundberg

Executive Editor Richard Pastore; Managing Editor,

Production Cheryl R. Asselin; Senior Editors

Howard Baldwin, Alice Dragoon, Tom Field, Carol Hildebrand,

Art Jahnke, Christopher Koch, David Rosenbaum, Megan Santosus (Web & Print), Anne Stuart; Features Editors Elaine M.

Cummings, Todd Datz, Sandy Kendall, Meg Mitchell, Katherine

Noyes; Asst. Managing Editor, Production Steve King;

Copy Editors Kathleen S. Carr, Thomas G. Waigum; Senior

Writers Mindy Blodgett, Perry Glasser, Sari Kalin, Polly

Schneider, Derek Slater; Staff Writer Daintry Duffy; Editorial

Researcher Carol Zarrow; Editorial Assistants Kelli Botta,

Meridith J. Levinson, Lynne Zouranian; Editorial Operations

Manager Lisa Jayne Kerber; Administrative Assistant Stacy

Hague; Contributing Writers Gary Abramson, John Edwards,

Glenn M. Miller, Matt Villano, John Webster, Debby Young

DESIGN

Group Director, Art and Design Mary Lester

Art Director Lisa Munroe; Sr. Graphic Designers Hana Barker,

Terri Haas, Steve Traynor; Graphic Designers Robin B. Macleod,

Terri Mitchell; Associate Graphic Designers

Kaajal S. Asher, Jessica L. Sepe, Chandra Tallman

WEB SITE

VP / Executive Director, CIO.com Tim Horgan

Web Editor Stephen L. Singer; Web Writer Martha Heller;

Web Operations Manager Dagmar Eiben; Web Developer

Ellen Morey; Web Research Editor Kathleen Kotwica;

Vendor Program Manager Andy Burrell

CIRCULATION

VP / Circulation Carol A. Spach

Circulation Manager Susan Woodworth; Subscription Svcs.

Manager Denise Perreault; Circulation Coordinator

Tina Pescaro; Circulation Assistant Kim Cormican

PRODUCTION

Senior Production Manager Resa Altsher; Production

Associate Lee Tuttle; Ad Traffic Coordinator Chloe Taylor

EXECUTIVE PROGRAMS

Senior VP / Exec. Programs Lynda Rosenthal

VP / Event Development & Planning Robin L. Azar;

Director, Marketing Services Shellie Rapson James;

Director, Program Planning Susan T. Montgomery;

Fulfillment Manager Brian Fuce; Manager, Ancillary Products

Bill Kerber; Manager, Program Operations Cynthia Laird;

Managers, Program Development Thomas M. Pitkin, Michele

Zarella; xNet Program Manager Sherry Keyles; Program

Marketing Specialist Jeremy E. Draper; Administrator, Program

Planning & Finance Sandra J. Hughey; Administrator, Exec.

Programs Heather Beaton; Coordinator, Exec. Programs

Michael Barbato; Fulfillment Assistants Christina Cyr-Pereira,

Leah Silver; Meeting Planning Specialist Amy Sanderson

MARKETING

Senior VP / Marketing Cathy O'Leary Hayes

VP / News and Information Susan Watson; Media Relations

Executive Karen Fogerty; Research Director Bridget

Cammarata; Senior Marketing Research Analyst Carolyn

Johnson; Marketing Research Analyst Denise Kane;

Marketing Comm. Director Marcy L. Dill; Program Strategist

Lisa Wilson-Wirth; Cust. Service Rep. / ConsultWare Dot

Caspersen; Marketing Assistants Julie Hanson, Kari Noah

ADMINISTRATION

Senior VP / Operations Walter Manninen

Assistant to the Publisher Diane Martin;

Staff Accountant Stephanie Roche; Billing Administrator

Joyce Gillis; Office Coordinator Dawn Cora

INFORMATION SYSTEMS

VP / CIO David Woodall; Manager, Network Services James C.

Burgoyne; Manager, Desktop Services Louise Pelletier; User

Services Specialist Michael Fahlsing; IS Specialist Simon Liang

JUST RECEIVED
YOUR
FILE-AID[®] BILL?

WANT AN
ALTERNATIVE?

STARTOOL

So stop screaming and start saving money. With added functionality, fast installation and easy usage (all at a lower cost), StarTool is the solution to your File-AID bill.

Call SERENA at 1-888-321-9969 to receive a StarTool Upgrade Roadmap.

Or, visit our web site at www.serena.com/startool to find out how much you'll save by moving up to StarTool.

serena

www.serena.com

© 1999 SERENA Software, Inc. All rights reserved. StarTool is a registered trademark of SERENA Software, Inc. File-AID is a registered trademark of Fujitsu Software Corporation.

In My Opinion

FOR MANY YEARS I'VE HEARD CEOs complain about the lack of reliable measurement criteria to evaluate their CIOs and the performance of their company's IT function. According to H. James Harrington, "Measurement is the first step that leads to control and eventually to improvement. If you can't measure something, you can't understand it. If you can't understand it, you can't control it. If you can't control it, you can't improve it."

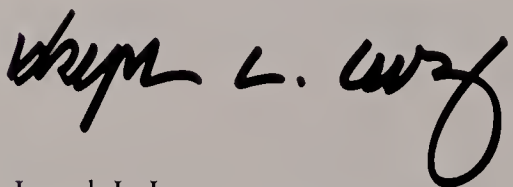
History provides us with many examples of turnaround situations that support the need for measurement criteria. For example, between 1992 and 1993, Sears' Merchandising Group went from a \$3 billion loss to a \$752 million profit. A vital element of this was the creation of a measurement system that tied job satisfaction and commitment directly to customer retention and improvements in store revenue. None of this would have been possible without IT systems and procedures providing the quantitative data. (For more on Sears, see "Stand and Deliver," Page 74.)

While study after study demonstrates that employee job satisfaction and commitment drive service quality, less than 25 percent of all

executives report that their organizations utilize these measures to predict financial performance and customer satisfaction. If measurement is so critical to business success, why don't executives measure more of the things that matter in a timely and effective manner?

As a *CIO* reader, let's take the following test concerning your enterprise. First, put down this copy of *CIO* and make a note of the key things that really matter to the long-term success of your organization. There's revenues, expenses, profits, customer satisfaction, employee loyalty and turnover, to name a few. Now make a list of the measures covered in your most recent business review meeting. Do the two lists match?

Are you reviewing the things that really matter to your business? Or is your organization another example of the measurement paradox in which there is a chasm between the theoretical importance of measurement and the reality of denial.



Joseph L. Levy
President and CEO, IDG Communications Inc.
jlevy@idg.com

PHOTO BY WEBB CHAPPELL

**If measurement
is critical to
business success,
why don't executives measure the
things that matter?**

On Our Web Site

cio.com

<http://www.cio.com>

Read It Online

The complete, full-text versions of the articles that appear here, including links, are now available on the *CIO Enterprise* home page.
enterprise.cio.com

Ask the Expert

Have a question about supply chain management? You can pose it to Bernard Teiling, assistant vice president of business process integration at Nestle SA in Vevey, Switzerland. From now until Sept. 30, Teiling will be available at asktheexpert@cio.com to offer insight and advice on how to avoid the unexpected costs and problems that some companies have encountered in managing their supply chains.

Resource Centers

CIO's Resource Centers provide IT and business executives with links to trends, developments and intelligence on how to use technology for competitive business advantage.
www.cio.com/forums

How to Reach Us

E-mail: letters@cio.com

Phone: 508 872-0080

Fax: 508 879-7784

Address: CIO Communications Inc.,
492 Old Connecticut Path, P.O. Box
9208, Framingham, MA 01701-9208

Web Site: www.cio.com

Subscriber Services: 800 788-4605;

Fax: 508 879-7899;

E-mail: denisep@cio.com

Reprints: Reprints are available by calling RMS at 717 399-1000, Ext. 31.

<http://enterprise.cio.com>



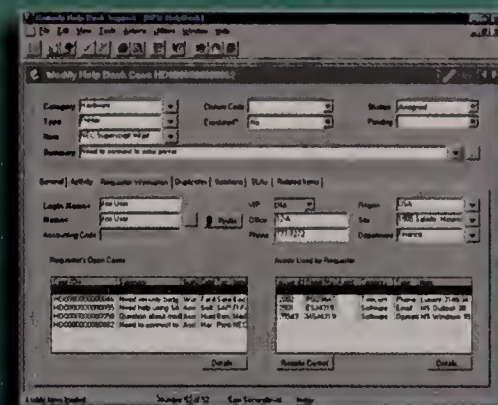
INFORMATION TECHNOLOGY
SERVICE MANAGEMENT



EMPLOYEE WORKPLACE
AUTOMATION



CUSTOMER RELATIONSHIP
MANAGEMENT



Can Your IT Service Desk Handle What's Coming?

Is your help desk feeling the pressure?
No problem. There's a relief valve.
Remedy Help Desk™

Right out of the box, the Remedy solution adapts to your enterprise's changing size and shape. Any challenge you throw at it — e-commerce, ERP, Y2K, OS Migrations — Remedy handles with ease. And Remedy Rapid Results™ gets you going in 15 days. Guaranteed. No wonder Remedy is the help desk at over 7,000 customer sites and the first choice of over 60% of the Fortune 100.

Anticipating more pressure? Remedy also provides enterprise solutions for Customer Relationship Management and Employee Workplace Automation. Try it yourself.

Get Remedy Help Desk Express free. Visit www.remedy.com/express, enter coupon code 3ADV199301, and watch your capabilities grow. For more information call 925-469-4250.

 **Remedy**
Corporation

The Most Adaptable
Enterprise Applications™

This Month...

Harvesting will reach the 100% level by planting another 100,000 cubic feet of seedling for the fish on Hawaii's leeward coast. The hatchery, the first operated by the Department, will also plant on the fish on 100,000 cubic feet of seedling.

New Productivity Goals for 1999

[illegible]

Employer of the Month

This month's keynote at the School is from Parents of the American-Mexican Organization. Anne has been with SAC's Organization for this year when she worked as secretary for the Family Management Institute. Anne worked her way up to Manager of the Institute and took a lot of stress. Anne then is connected with the husband's job and now, Robert, Anne and

Don't Forget Those Timesheets

From November to late in June, roughly, discharges are low. The Annapolis Department's main operations involving all members by the 30th day of June each year. Many have noticed that the company's 30th day of June is not always the same number in a month's time. That's one of the year.

**THE GRUNTLAND
CORPORATION**

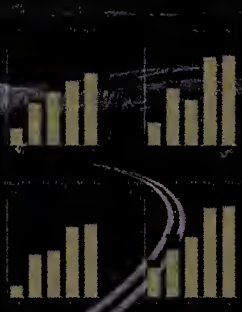
A Time *for* Productivity

A LETTER FROM F W GRANTHAM

The company will derive approximately a 62% of its net sales from its retail chain operations. While the new speculative sales and new store development activities are the main components of sales for the remainder of this year, the company's gross net sales have all increased from its fiscal 1997, due mainly to the company's new expansion programs and comparable store sales increases. Comparable store sales increased by 10% of the company's strategy of changing retail in existing markets. The management has not yet experienced this potential level of the contribution of existing stores by new stores as the most contribution will be from new stores, but management has been justified by the incremental sales and profits in new store development.

The company anticipates that growth, as well as increased competition, will further broaden our customer base and demand for new products and services. The company's fiscal year ends on the day after Christmas. New sales accounted for 25 percent of the company's revenue in the previous year, and we anticipate a percentage increase in sales volume and revenue in the current year. The company's revenue is combined with an increase in average dollar value per customer. Due to the unusually high volume during the holiday season of 1989, the company effected a price increase on its products, and the company anticipates a positive result of sales. I thank you for consideration in this matter and forward to you the resume.

The weather
in London
is perfect



*Don't Waste Another Minute
Invest In Your Child's Education Today*

Page

[illegible]

With the rising costs of college education, by the year 2010, a college education is projected to cost \$52,000 per year for most colleges. This does not include tuition, fees, food and housing. So, a college education is projected

2) Capital flows reflect gross expenditure on foreign savings less that due to the US's net foreign investment position. Expenditure on foreign savings is the sum of gross savings + net foreign investment + net exports and imports.

 THE GRANTHAM CORPORATION

HP. Better color, no matter what you're printing.

Introducing a new family of color printers for the office. From the cubes to the corner offices everyone has things they want printed in great color. To that

The HP Family of Color Printers starts at \$399.



end, we make everything from desktop printers to departmental workhorses. And to ensure brilliant color, these networkable printers offer our acclaimed Color Layering technology. PhotoREt Color Layering for inkjets. ImageREt Color Layering for lasers. Affordable? Yes. Reliable? Yes. Website? www.hp.com/go/officecolor

Edited by Todd Datz

Plugged in

Survey Says 16

Ship Conferences 16

Sharing Information 18

IT Staffing 18

In Their Own Words 20

Engineering and Technology 20

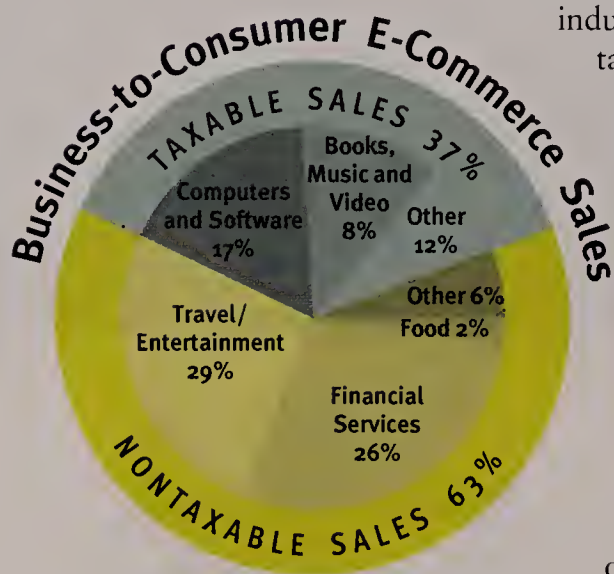
Internet Taxation

'Cause I'm the Taxman

NOTHING CAUSES pulses to quicken in the halls of government like the prospect of uncollected tax dollars, and the high-flying growth of e-commerce has state and local politicians frantically trying to convince Congress that they deserve a bigger cut of the pie. To rebuff their rhetoric about lost tax revenue, Internet industry leaders are countering with the threat that any further taxation of e-commerce will slow the development of the Web as a vehicle for economic growth. So far, the federal government has taken a hands-off attitude toward the issue, with only retail Internet purchases such as computers, books and music subject to taxation. But when the Internet Tax Freedom Act expires in October 2001, that respite is likely to end. Between now and then, the 19-member Advisory Commission on

Electronic Commerce (which is made up of representatives from both government and industry) has to figure out exactly how much the states are losing under the current tax systems and how taxes should most fairly be levied on Net purchases.

Ernst & Young's economics consulting group has been studying the issue of Internet taxation, and in June they released a report entitled, "The Sky is Not Falling: Why State and Local Revenues Were Not Significantly Impacted by the Internet in 1998." The report argues that 80 percent of current e-commerce is business-to-business sales that, in many cases, are not subject to sales or use tax (tax levied on items bought out of state not subject to an original sales tax), and that out of the remaining 20 percent (\$20 billion) that is retail sales, only a small percentage is taxable. Ernst & Young's reasoning (see chart at left) is that 63 percent of retail sales on the Internet in 1998 were travel and financial services or nontaxable products like groceries and prescription drugs. When you also factor in the estimate that 60 percent of e-commerce purchases would otherwise be made by nontaxable mail-order or phone sales and that some states do not have a state sales and use tax, the potential tax benefits become even smaller. In fact, Ernst & Young's study claims that only \$2.6 billion (13 percent of total e-commerce retail sales) is potentially taxable. If that figure is correct then state governments are desper-



SOURCE: "THE SKY IS NOT FALLING: WHY STATE AND LOCAL REVENUES WERE NOT SIGNIFICANTLY IMPACTED BY THE INTERNET IN 1998," ERNST & YOUNG, JUNE 1999

ILLUSTRATION BY HARRY CAMPBELL

WE'LL HAVE YOU READY FOR THE ONLINE CHRISTMAS RUSH IN 72 HRS. WE'LL ALSO REGISTER YOU FOR THE GREAT GOLF GIVEAWAY.

CLICK ME



“FaceTime gives our Web customers instant messaging with a live human being. The ability to quickly click to live help has dramatically increased sales and translated into significant repeat business.”

Jim Thompson
VP Marketing
Mammoth Golf

I'M HUMAN

You're shopping on the Web. You have a question. You need help! On a FaceTime-enabled Web site, live human help is one click away. An interactive window pops open on your screen and a real, living person answers your question, finds your solution and even shows *your* browser exactly where to find what you need. Thanks to us, Mammoth Golf's retail Web site — www.mammothgolf.com — is a runaway success.

We're FaceTime Communications, the leader in bringing the human touch to Web customers. If you'd like us to do the same thing for *your*

eCommerce operation, please check out *our* Web site: www.facetime.net/cio1. Not only will we tell you everything you need to know about who we are and how we work, but we can have you up and running — and your competition shanking balls — within 72 hours. More satisfied customers and more repeat business are just a click away ... for you.

Oh, yes. Come to our Web site and we'll also register you to enter The Great Mammoth Golf Giveaway. So, what are you waiting for? Christmas?



www.FACETime.net/cio1
COMMUNICATIONS

CLICK ME, I'M HUMAN™

©1999 FaceTime. FaceTime and "Click me, I'm Human" are trademarks of FaceTime Communications, Inc. All other trademarks are acknowledged. TRBA

Plugged In

ately looking to fill their piggy banks to the tune of a mere \$170 million in taxes. Peanuts!

Robert Cline, national director of state and local tax policy economics for Ernst & Young, hopes that the report will clarify much of the conjecture about e-commerce revenues. "There is a lack of good information about the current size of the e-commerce sales base," says Cline. Given the results of the research, he hopes the Advisory Commission will carefully consider the complex taxation issues involved with e-commerce to avoid arriving at short-term, ad-hoc law changes (read: higher taxes) in October 2001.

—Daintry Duffy



Survey Says

Why Consulting Is Popular

1999 MBA GRADUATES CONSIDERING careers in consulting expected an average total compensation package of **\$139,000**—up 9.4 percent from last year. Students at Stanford University expected **\$165,000** in total compensation. The average expected starting salary for all respondents was **\$96,000**. The average signing bonus expectation was **\$19,000**. Almost half expected some tuition reimbursement; the average expectation was **\$24,000**.

SOURCE: "MBA RECRUITING TRENDS: GAINING A COMPETITIVE EDGE," 1999 EDITION, A STUDY BY KENNEDY INFORMATION RESEARCH GROUP

Ship Conferences

Cruise Musings

LUXURY CRUISE SHIPS ARE INCREASINGLY THE SETTINGS FOR high-powered (and expensive) business and IT conferences. Having recently shipped out on the Queen Elizabeth 2 for Richmond Event's opulent annual CIO Forum, *CIO* Executive Editor Richard Pastore offers the following cruise tips:

TITANIC JOKES Expect the first to hit just after you step on the gangplank to board the ship. Expect the last as you board the shuttle bus to take you back to the airport.

BLACKOUTS Don't expect to watch any TV or read the newspaper. The event coordinators will block all TV channels during conference hours to ensure you get the most out of your conference experience.

NO SERVICE That's the message you will repeatedly see on your cell phone when you try to call the office and the family.

\$1224.49 That's the charge you'll see on your incidentals bill if you use the ship's satellite service or rent an Iridium phone to call the office and the family.

GOURMET FOOD Don't even try to eat healthy. Order everything that sounds good (and it all sounds good). You can even ask for seconds—the wine stewards and waiters are trained to respond pleasantly to your gluttony. But you can't work it off in the ship's gym. That's also closed during conference hours.

SEA SICKNESS Have no fear. You'll be too busy eating, pulling your hair out trying to call the office and sprinting from one vendor meeting to another to notice that the ship is moving.

THE CAPTAIN You won't see the head of the ship, except for a brief glimpse as you board and disembark. Why would the captain want to hang out with geeks like us? ■

STRATEGIC DIRECTIONS

The Means to an Edge:

Knowledge

MANAGEMENT

KEY TO

innovation

CIO

Special Advertising Supplement

**It's not that we can't stop working on a client's problem.
It's just that we hate to quit when we're on a roll.**

On Wall Street, momentum is everything. That's why we helped design and run a benchmark study to prove our Microsoft® Windows NT®-based servers can keep The Nasdaq Stock Market going, even in a tidal wave of transactions. One billion shares later, it was still going strong. In fact, we showed it could handle two billion shares traded and scale up to four billion per day. Now, Nasdaq is installing tough, reliable Unisys Aquanta™ servers based on the Intel® Pentium® III Xeon™ processor. Because when the fastest growing stock market in the United States is rolling, nothing better get in the way. www.unisys.com



**pentium® III
xeon™**

Nasdaq is installing Unisys Aquanta ES 5000 servers running on the Intel® Pentium® III Xeon™ processor.



UNISYS

We eat, sleep and drink this stuff.

KNOWLEDGE MANAGEMENT: BIG CHALLENGES, BIG REWARDS

Knowledge management seems to be on the tips of everyone's tongues these days. But not Jim Tighe's.

Tighe says he dislikes the term, because it implies that knowledge is something that can be managed. "Many of the mindsets around the concept of knowledge management assume that tacit knowledge can always be put in words, pictures and databases," says Tighe, who is manager of quality and performance management at Chevron Corp. in San Francisco. But concepts like negotiation and leadership, he says, "are skills and know-how that are difficult to transfer through explicit means."

Nevertheless, corporations around the world are accepting the challenge to manage the sharing of knowledge inside and outside their walls. The challenges of knowledge management are big, but so are the rewards.

Perhaps few corporations have been rewarded more than oil company Chevron Corp., whose devotion to total quality and to knowledge sharing and management has in recent years raised employee productivity by 50%, according to estimates by company officials.

Kenneth Derr, chairman and CEO of Chevron, gave his first speech on KM in 1995, just about the time the term was becoming an industry buzzword. But it could be said that KM began decades earlier at Chevron, when some of its specialists began holding regular conferences. Such communities of practice "functioned very well before we had anything but telephone technology," says Tighe.

Then, in the early 1980s, Chevron installed IBM's PROFS system, a predecessor of today's groupware technology. With the deployment of PROFS and the incorporation of a best



practices methodology, KM accelerated within Chevron, beginning at the business unit level and then, according to Tighe, "bubbling up to corporate."

In the 1990s, Chevron began a focus on total quality, although the effort fell short of being a corporate mandate, according to Tighe. A small staff was formed to support the focus on quality, and this group brought in benchmarking resources and established regular contact with companies outside Chevron. "The concept of systematically trying to identify and transfer best practices was an outgrowth of the basic principles of total quality, which involve taking measures to improve work processes, products and services from a customer satisfaction perspective," he says.

At the same time, grassroots activities were starting within Chevron. Employees in differ-

ent parts of the company with different job functions began to collaborate via e-mail, Web sites and meetings, in order to share their knowledge and expertise. Some of these communities developed their own Web sites, with their own database capability and distribution lists, and, says Tighe, "those systems often provided more real-time transfer of best practices and lessons learned than formal databases." The reason for this, he says, is that the internally developed Web sites represent a model of employees interacting around changing business needs, whereas in the formal database model, practices are defined with flow charts and can be used by anyone. The database model "can get dated," he says.

The effectiveness of this system of sharing knowledge is most noticeable in Chevron's capital management projects. "You don't get people to change the way they manage capital management projects by giving them a how-to," Tighe says. "The

better way is through periodic conferences, where they get together and talk about what worked as well as what didn't." A valuable adjunct to such conferences, he adds, is the project team itself, because a member of that team can educate others on the best practices and lessons learned.

Through KM, Chevron implemented a new standard methodology for capital project management. In one such case, 60 companies shared their data and their practices. "It was possible to compare your performance and identify which companies are best and why," says Tighe. It's from this process, he says, that Chevron evolved its own capital project management processes.

Overcoming Barriers to Knowledge Management

Notwithstanding the preponderance of knowledge that its employees share, Chevron has always been and remains a decentralized organization, and some of its business units are slow to adopt methods and practices successfully used by others. As a result, in the past few years, Chevron has turned its attention to its internal cultural barriers. The corporation wants to show the units reluctant to adopt KM "where the commonality is, and what techniques are useful across dissimilar businesses," says Tighe.

Business pressures are another barrier to the implementation of KM, because they reduce the amount of time available to translate good practices to other parts of the company. "It took time to get our capital project managers—who had their own way of doing things—to adopt standard best practices," says Tighe. "But only by consistently identifying and learning about what that is can we continue to improve performance."

The opportunities afforded by the extranet are currently important to Chevron. These activities are designed to instill best practices at Chevron's 8,000 gas station and convenience store operations, by helping them make use of Chevron's Web-based dealer network for transactions, training, and consumer and product information. Chevron's role, says Tighe, is to gather data on consumer preferences and build that into the way it develops and delivers products and services at the outlet.

When CEO Derr gave his speech on KM in 1995, he talked about creating "an organization that learns faster and better than competitors through benchmarking. . . through sharing and implementing best practices. . . by learning from experience, and through continuous learning and personal growth."

In a speech three years later, he was able to de-

Finnair: Flying High with Cool ICE

With a fleet of 58 aircraft soaring to 50 international and 21 domestic destinations, Finnair Group, "the national airline of Finland," carries its passengers to the most scenic cities in the world.

To help sell all those seats, more than 250 Finnair salespeople around the globe rely on e-commerce software from Unisys Corp. for creating, organizing and managing Internet and intranet solutions. The software is called Cool ICE.

What led to the deployment of Cool ICE was that the interface to the airline's MPS sales management system simply wasn't user friendly. "Our salespeople must enter sales information on the MPS system," says Pertti Maattanen, Finnair's director of economics and planning. "But, as many users complained, it was slow and difficult to use. We were already equipped with brand new PCs; we just needed to update the sales management system. We decided to configure the system differently, and we wanted a cutting-edge product to help us."

Wanting to maintain the existing application, Finnair, working with Unisys, decided to create, organize and manage an intranet application by leveraging the sales management database in a secure environment. By modernizing the user interface, Cool ICE quickly breathed new life into the system.

"Within a few months of starting the process, more than 250 users around the world [were using Cool ICE]," Maattanen says. "With Cool ICE, our sales management application works much faster, has a more modern look, and our employees find it much easier to use. And I am 100 percent positive that it will make my job easier by helping me budget our revenue and track investments."

"The cooperation and support from the entire Unisys team has been excellent," adds Maattanen.

scribe several successful KM-related projects, each of which had resulted in substantial savings. These included an energy utilization project, whose efficiencies had reduced costs by \$200 million; the previously mentioned standard methodology for capital project management, which saved hundreds of millions of dollars; and an organization learning system for drilling oil and gas wells, which reduced drilling by 12 to 20 percent and decreased cycle-time up to 40 percent.

Xerox: War Stories Beget KM

Xerox Corp., headquartered in Stamford, Conn., is built upon the twin pillars of document management technology and research in knowledge sciences. Today the corporation is pushing to be known as "The Knowledge Company," not only to its customers but internally as well. Xerox's two best-known KM projects are called Eureka and AmberWeb. Both of these were originally internal projects that are now commercially available as well.

The Eureka system stemmed from the practice of Xerox service workgroups—typically four to seven technicians with joint accountability for a group of customers—gathering at the end of the day to exchange war stories about repair problems and what they had done to solve them. This informal exchange of information was a valuable adjunct to repair manuals, which were difficult to keep current and complete, given the infinite number of problems that could occur.

Xerox expanded the concept of this informal exchange of information and decided to create a system that would treat its service division as one global community, rather than a collection of local groups. In 1996, Xerox piloted Eureka, a system that electronically gathers and shares tips on service repair for technicians worldwide.

Today, there are nearly 5,000 tips stored in the Web-based system, all "bylined" by their originators. "It took us a while to figure out the right incentive to get [the service technicians] to submit their tips," says Dan Holtshouse, director of business strategy knowledge initiatives for Xerox.

Who Drives KM Implementations?

With top management increasingly committing to knowledge management as a strategic process, more and more companies are moving from evaluation to planning, piloting and production of KM applications, according to a study published this year by The Delphi Group, an advisory firm in Boston that specializes in the business and technical implications of knowledge-based organizations.

Most of these currently consist of collaborative systems, such as Lotus Notes/Domino, and intellectual asset management applications. But with KM being increasingly driven by the Internet, e-business and intranet content management applications are also on the rise.

KM implementations are being driven by business executives and managers. In a Delphi study of 300 companies, the KM mandate came from the corporate executive offices in 153 of them. In 60 companies, line-of-business managers drove the mandate. (This is in contrast to the traditional departmental sponsorship for document management systems, text retrieval and workflow efforts.) In only 51 companies did IT management sponsor the KM initiative.

Delphi reports that most companies that have implemented KM want to expand the scope of their applications to include e-business and intranet content management. Respondents want to integrate all their information resources; they also want more integration of KM software with other systems, including the overall desktop environment, ERP systems, and their CRM and supply chain management processes.

Workflow process management is also important. According to the report, companies want vendors to integrate tighter, more transparent workflow into their systems and to develop better methodologies for capturing an organization's process knowledge. For e-business applications—e-commerce, CRM, call center support and intranet content management—companies are looking for the integration of diverse media. For CRM, the demand is for integration of information from data warehouse and business intelligence sources.

Organizations want the ability to mine knowledge sources, which include such features as a central search facility and improved searching and indexing, content analysis and automatic categorization capabilities, improved data analysis and personalization functions. These features are inherent in the concept of the corporate portal, the single point of access across the applications, repositories, processes and functions that have proliferated in the enterprise information environment.

"What worked was personal recognition. Their name and the name of the validator goes with the suggestion." The incentive is obviously working. Xerox technicians use the system at the rate of 5,000 tips per month, and they contribute 1,000 new suggestions per month.

Currently, more than half of Xerox's 22,000 technicians worldwide have access to Eureka, and the corporation is in the process of rolling out Eureka to all of them. But the growth of the system has created problems, particularly in dealing with knowledge obsolescence. "The knowledge base is getting large enough to employ usage patterns to determine what content is most useful, and what isn't being used at all," says Holtshouse.

XEROX AND MICROSOFT
ANNOUNCE A NEW DIRECTION
FOR EVERY COMPANY THAT
WANTS TO SHARE KNOWLEDGE
ON THE NETWORK.



1-800-ASK-XEROX www.xerox.com

XEROX, The Document Company, the digital X, Keep the Conversation Going, Share the Knowledge, and Document Centre are trademarks of XEROX CORPORATION. This model may contain some recycled components that are reconditioned. Microsoft, Windows, the Windows logo and Windows NT are registered trademarks of Microsoft Corporation in the United States and/or other countries.



**END THE BOUNDARIES BETWEEN PAPER
AND DIGITAL DOCUMENTS. WITH THE
XEROX DOCUMENT CENTRE FAMILY
YOU CAN NOW SCAN DIRECTLY TO
MICROSOFT EXCHANGE SERVER ON THE
WINDOWS NT PLATFORM. AT UP TO
30 PAGES PER MINUTE. BECAUSE THE
MORE YOU GET INTO THE NETWORK,
THE MORE YOU'LL GET OUT OF IT.**

**KEEP THE CONVERSATION GOING.
SHARE THE KNOWLEDGE.**

DIGITAL
THE DOCUMENT COMPANY
XEROX

The Human Side

Technology is not the ultimate answer to achieving an effective knowledge-sharing work environment. KM tools and supporting technologies, such as groupware, search/retrieval engines and data warehousing, are only part of the solution.

No, the gist of KM has to do with human factors, including behavioral, organizational and cultural aspects, according to Marianne Hedin, research manager for International Data Corp.'s Consulting Services Research Program. For example, it is impossible for an organization to achieve the full benefits of KM if its structural rigidity restricts information and knowledge flow, or if its employees are unwilling to share their knowledge. The importance of these "soft" issues has fueled a rapidly growing new business for the services industry, specifically, the consulting firms that help clients implement KM programs.

Because KM is as much about culture, organizational or behavioral change as technology, consulting firms take a broad view of KM. They tend to tackle five areas in an organization: strategy, process, people/organization, content and technology. These five areas are interdependent; it is nearly impossible to change one factor without affecting another.

KM service offerings include consulting (assessing, evaluating and planning), implementation, operations management, training and support. Implementation accounts for as much as 65 percent of KM services, while consulting, the second largest service offering, represents 15 to 20 percent. Operations management, which includes outsourcing, is the newest and fastest growing KM services area.

Organizations are increasingly turning to IT services and consulting firms to take over the day-to-day management of their KM technology infrastructure and applications. However, the people, organizational or cultural side of knowledge management must be managed internally.

Even though consulting services firms offer KM as standalone services, they are typically provided as part of other engagements. KM is seen as enhancing other service areas, such as customer relationship management, ERP, supply chain management and e-commerce. In fact, KM will eventually become an essential component of almost all types of services.

Some of the tips are not active anymore. We have a process to validate an idea, but as the knowledge base gets bigger, what kind of process is needed to keep it up to date?" Issues such as these are representative of the new set of problems that Xerox must find answers for.

Since Xerox officials say that Eureka has reduced their cost of service by 10 percent, it will obviously be worth finding the answers to the problems.

Web Site for Researchers

AmberWeb, a community-of-practice Web site, started out as a solution for 500 researchers involved in Xerox's Knowledge Capture Integration and Access initiative, enabling them to share progress on their research. Once issues such as whether researchers had the freedom to set up individual workspaces, who had access to these workspaces, and who had control over content were settled, the researchers took to the system. They used it to post their latest research (which the system automatically tagged as new) and to respond quickly to the work of others.

AmberWeb spread like wildfire, not only among the researchers, but also the corporation's product planners and marketers. Today the system is used by 30,000 Xerox employees.

Xerox is also employing KM processes to look at information about customers. This information is captured through both automated and face-to-face methods. "We get about 800 customer questions a day," says Holtshouse. An information base, which contains the answers to 250,000 customer questions, is offered internally on Xerox's Web site. Xerox can search this knowledge base by product, technology, customer or customer type to find out about customer use, track the patterns of problems, and identify the possible causes of the problem, ranging from maintenance to product design.

Xerox is "in the process of establishing knowledge sharing with all of our employees as a natural process of everyday work," sums up Holtshouse. "We are going beyond the quality movement, but it forever implanted the notion of benchmarking, of best practices, within the work culture of Xerox — how you can proactively share best practices, ideas, solutions and connections."

AT&T: Enabled by Intranets

For many organizations, the intranet is not only the structure by which they begin to grasp the diverse possibilities of KM, but the enabler as well. That was the case for AT&T, headquartered in New York, N.Y.

AT&T's KM effort began as a result of the company's concerns about its aging workforce, its large number of work centers with many people in them, whose jobs had become very specialized, and the fact that the organization was "very product silo-based," according to Janice Scites, the officer in charge of Internet implementation strategy at AT&T.

"We could see that as we went on, not only did we need to lower our unit expense, but also we had to find better ways to train our people and deliver service to our customers," Scites says. "If we continued on the path we were on, this was not going to work."

AT&T decided that KM and the Web were solutions for capturing and disseminating information about how people did their jobs and, in the process, for accelerating employee training and improving customer service. The first target was the call center for customer service, where employees struggled with "30 volumes on their desktops," containing information on products and the systems that supported them, says Scites. "We started to analyze what employees were really doing. We chose high performers, captured the way they did their jobs, and created templates of those processes."

As a result of this effort, at the end of 1995, AT&T launched a Web-based KM program to make information and services available to 4,000 employees.

Access for Everyone

Fast forward. Today, through the intranets inside AT&T, every employee has access to the Web sites and KM tools. The savings in manpower, training and time has amounted to hundreds of millions of dollars, according to Scites. And that estimate does not include what AT&T is also saving by being able to use an intranet and the same tools to assimilate, educate and serve the new employees it gained after a recent acquisition of a communications company.

AT&T employs intranets to give its employees

Sharing Community-Based Knowledge Through Virtual Workspaces

Many tools designed to support electronic collaboration fall short because they don't provide a flexible enough environment for diverse groups of people working together.

"In a typical organization, 80 percent of the documents are sitting on individuals' hard drives," says Patricia Peper, Xerox DocuShare marketing manager. "Unfortunately, these documents are largely inaccessible to others, so people spend a great deal of time reinventing the wheel."

Xerox DocuShare solves this problem, allowing people to create virtual workspaces where they can easily share information, collaborate on documents and stay connected with co-workers. The community-based collaborative environment taps the Internet to deliver enterprisewide Web-based knowledge-sharing capabilities with minimal overhead.

Only 18 months after DocuShare was developed by Xerox researchers for their own use, more than 10,000 Xerox employees were using it without training, administration or technical support. DocuShare is now used by thousands of companies and organizations worldwide, where its ease of deployment and ease of use make it popular with IT and knowledge workers alike.

With Version 2.0, released in April,

the product evolved from a standalone application to a knowledge-sharing platform, permitting easy integration of other applications, devices and processes into a unified solution. DocuShare is now being offered to customers by the Xerox Internet and Software Solutions business unit, the Xerox sales force, and resellers and systems integrators.

One customer is David Peloff, program coordinator and Web developer at the Center for Technology and Education at Johns Hopkins University. "I began looking for a software solution that would allow our users to share resources via our Web site," he says. "We needed effective search features, an easy way to organize resources and information, and, most important, a solution that would work across different platforms."

"DocuShare was the only solution I found that allowed users to upload files and create a shared hard drive of resource data," says Peloff. "And we were able to use the bulletin board as a way to post information to help keep everyone up to date. New technologies like DocuShare are creating more interactivity on the Web, giving people an opportunity to contribute and share a sense of ownership."

information on everything from corporate policies to pension and 401K plans. Employees can do their own economic analysis of their pensions, put what-ifs on the screen, and get answers immediately. This ability to get answers in real-time proved especially helpful during a corporate downsizing in 1998. When AT&T offered the employees retirement incentive programs or buy-outs, many more employees took the offer than the company had at first estimated—50 percent more. The reason, notes Scites, is that employees were able to determine the value of their re-

tirement programs quickly enough to make informed decisions.

At AT&T, most specific groups, such as R&D, customer care and consumer products, have their own Web sites. Each Web site has a feedback capability and a mechanism for responding to suggestions or queries. There are chat rooms for exchanging ideas and posing problems, interconferencing for global virtual meetings over the Internet, and collaborative Web sites for projects, containing virtual file cabinets about the project and information about team members.

The big problem facing AT&T in regard to its KM effort is whether to allow employees to customize their desktops and use intelligent agents to pull down enormous volumes of data. The prospect of adding a layer of job-specific software that enables every one of AT&T's 130,000 employees, not to mention contractors, to do so is an issue that troubles Scites. The individual's productivity is important, but must be balanced against the network's load and speed, she notes.

Hewlett-Packard: Goldmines and Garbage Cans

Hewlett-Packard Co. has fostered technology-supported collaboration since the early days of Lotus Notes. But today, Cupertino-based HP has more than 7,000 Web sites and an intranet that moves as much as 9 terabytes of information a month inside the corporate firewall. The HP.com site began in 1994 with 5,000 pages; today the index alone is 5,000 pages.

HP's intranet offers the usual corporate information but also business unit, product, function and special-interest Web sites. Customer support centers have intranet access to problem resolution information and records of customer support requests and the answers given. The intranet also includes a database of company-wide expertise created by HP employees. Employees can log into this Connex database, note their areas of expertise, and state their willingness to talk with anyone interested.

In short, HP's intranet is a veritable goldmine of information, says Alecia Flores, program manager for decision support systems for HP's Ad-

Redesigning the Design Process

LizFirst is not a new line of clothing for fashion industry giant Liz Claiborne, but a fashionable new way of running its business.

In the mid-1990s, faced with year 2000 issues and slowing growth, the Bergen, N.J., company determined that it had to transform itself. Thus, LizFirst was born, a reengineering campaign whose goal was to create a Liz Claiborne that is first in responsiveness, service and total value.

To help achieve this, Liz Claiborne's Information Systems group was charged with delivering applications for the new millennium. According to John Sullivan, vice president of information systems, the technology strategy chosen for the "Transformation 2000" initiative is based on open systems, best-of-breed applications, a centralized operational database and decision-support data warehouse (both using Oracle database management systems), and one hardware platform (scalable, high-availability servers from Hewlett-Packard).

Critical to the goals of the LizFirst initiative were the many knowledge-focused

projects that would improve decision-making for the company's employees, retailers and suppliers. "We're pushing our projects out to both ends of our supply chains," says CIO John Thompson. "We gain cost improvements, reductions in cycle time and a competitive advantage with our customers."

Part of the IT transformation is the centralized data warehouse. "Our data warehouse allows us to know more about our customers' sales of Liz Claiborne products than they do," says Sullivan. This year, through its LizLink extranet Web site, the company has begun sharing the benefits of this knowledge with its retail partners to help them improve planning allocations and sell-through.

Another component of Liz Claiborne's Internet strategy is its Virtual Showroom on the Web, a new way for retailers, particularly mid-size and smaller specialty stores, to shop the Liz Claiborne line. The Virtual Showroom was designed by C-Bridge Internet Solutions, using HP imaging technology.

To free its designers for research, Liz

Claiborne has automated its product design process. Manufacturing representatives, design liaison and the textile mills in Asia can now access the centrally stored pattern designs and specifications from their desktops. (Computer Design's U4ia CAD system and Animated Images' Style Manager are used for garment-pattern development.)

Another part of the new design process is an automated fit session. When a factory creates a sample, a designer can return comments and visual instructions captured on video, reducing the number of iterations, improving product quality and creating a centralized fit history that leads to long-term improvements. Design automation and video fit sessions are reducing time to market by 50 to 70 percent, and speeding response to trends.

In choosing HP as its strategic technology partner, Liz Claiborne "needed an organization with significant resources, superb technology and an understanding of change management," says Thompson. "That was Hewlett-Packard."



Are you ready for this

© 1999 Hewlett-Packard Company

new age of e-services? Time to get prepared. After all, the Internet is about to be reborn. And the way your business uses the Net is about to change forever. Thanks to e-services, the Internet will be much more than a collection of websites, or a way to handle business processes online. Instead, e-services will be a catalyst for the service-based economy. Opportunity will explode exponentially. And so will the importance of your business intelligence, as information pours in from all points and beyond. HP business intelligence solutions can help your company become the next online success. Ready for how business is done today. And tomorrow. www.hp.com/go/businessintelligence

The next E. **E-Services.**



Web-based, Thin-client Software Helps Mellon Bank Save Time, Money

"Finding a time-reporting application is simple," says Milan Burry, a vice president of software development at Pittsburgh-based Mellon Bank. "However, finding something that's Web-based, easy to install, doesn't require an enormous amount of administrative effort at the desktop and can meet the enterprisewide needs of an organization like ours is another story."

So when Mellon Bank heard about a Web-based workgroup management product from Account4.com, an operating division of Work Management Solutions Inc., in Newton, Mass., it decided to take a look. What it saw was Account4, a customizable, easy-to-use, thin-client software solution for tracking the work and resources of any organization.

Mellon Bank's installation of Account4 in November 1998 went smoothly. "We installed Account4 on our NT server, and 10 minutes later we were running the application at the NT desktop," says Burry. "Account4 is by far the easiest application that I have ever installed."

Because Account4 is a true Web-based application, it is more powerful than applications that provide only Web access, says Burry. "Account4 provides real-time access to a database or central repository. Information pertinent to a workgroup or enterprise can be available to any desktop anywhere using a browser, and feedback is instantaneous. If you want the same functionality from products offering only Web access, you'll have to add software at each individual desktop—and that can get expensive."

What's more, if Account4 were not a thin-client product, Burry estimates that he would have had to allocate at least an extra hour of installation time for the more than 1,200 desktop systems Mellon Bank has across the U.S. That time, and the travel involved in that installation process, would have substantially increased the cost of ownership of the application. As it is, Mellon Bank already has 600 users up and running on Account4, and Burry expects to have 600 more by year-end.

Burry is also impressed with Account4's e-mail messaging, viewing and reporting features, its hot links to internal networked documentation and its ease of use. But if a user needs help with the product, Account4, he says, "provides really solid online help documentation and a competent help desk—something few vendors offer."

Overall, Mellon Bank has been "extremely pleased with both the performance of the product and the responsiveness and technical competence" of the vendor, Burry says.

vanced Technology Center. But the problem, she says, is that "as it grows, the intranet can become a glorified garbage can" of huge volumes of unmanaged and unused information. To resolve this, HP has begun an initiative to create a generic, global Web site that will manage the internal knowledge of HP. The Web site, called Portico, will be hot-linked to all HP intranet Web sites that should be accessible corporate-wide and will be able to analyze how and how much existing sites are used.

According to Flores, who serves as liaison to the Portico project from the Advanced Technology Center data warehousing and decisions support

system group, "The tough part will be the metadata. When you are dealing with enterprise applications, they already have their taxonomy. When you are dealing with 7,000 Web sites, they don't have a taxonomy—the knowledge classes and attributes."

Flores' group is also creating a community of practice for all the people that access their Web site on data warehousing technology, including HP salespeople, sales support, and delivery support staff and consultants involved in implementing data warehouses for customers. This vertical portal will be hot-linked to Portico.

Says Flores, "People will be able to customize their front page of Portico if they want to know about data warehousing." The idea is to push to people the information they want, such as the latest performance measurement results for data warehouse configurations. "The user can say what they're interested in, and when it comes into the site, it's automatically routed to them," she says.

The project is now in pilot test, and Flores is already coming up with metrics to further analyze the system's value. "We need to know what documents are being used and how frequently, what's being used for 10 seconds and abandoned, and what is being studied for long periods of time," she says.

The Challenge of Portals

Inside a large corporation, there may be dozens or even hundreds of intranets, each with hundreds of thousands of pages on it. And these intranets are controlled by very small, very fragmented groups of people.

The fragmentation of intranets has led to a need for an enterprise knowledge portal—a single point of access to enterprise resources. According to International Data Corp., a market and research firm based in Framingham, Mass., this can be an information portal (one that offers access to all information sources), a collaborative portal (one that enables users to establish their own virtual project communities with conferencing, workflow, query tools and document management) or an expertise



IN WHAT DIRECTION IS YOUR BUSINESS HEADED?

Does it change from day to day? Or do you head down one road only to find you've gone 50 miles out of the way?

Maybe it's time to plan a new route. Account4™ Web-based business software products use your corporate intranet to increase productivity and profitability. By automating and integrating essential business functions — time & expense reporting, activity & project tracking, resource planning, work requests, knowledge and client management — Account4 can help get *and keep* your business going in the right direction.

Please visit us at www.account4.com for alternate routes.

Account4.com
A Division of Work Management Solutions

“Intraspect's Collaborative Knowledge Portal solution provides the best of both worlds. IKS 2.5 is the first product in the industry to deliver the unique combination of rich knowledge management services with powerful customization and personalization capabilities. IKS 2.5 makes it easy for customers, system integrators and ISVs to knowledge and portal-enable their applications.” — **Delphi Group**

“The most important challenge for the new generation of knowledge management software is to make knowledge sharing a painless and intuitive part of everyday working. Intraspect Knowledge Server 2.5 addresses this problem head on.” — **Ovum Ltd.**

“Intraspect represents the most evolved product in that it combines search with collaboration, shared foldering, and good tools on the data side. Anything just focused on the information side is a deficient strategy.” — **IDC**

With comments like this, who needs an ad agency?

“Intraspect continues to distinguish itself from other vendors of knowledge management solutions through its commitment to collaborative KM. Its latest offering, Intraspect Knowledge Server 2.5, has features that make it very attractive for organizations that seek to build and deploy enterprise portals.” — **Doculabs, Inc.**

“Intraspect's knowledge management breakthroughs include the ease with which its engines consolidate both structured and unstructured information and facilitate collaboration among communities of interest. Capitalizing on the power of the Web, Intraspect's core engines and services enable enterprises to develop and strengthen an institutional memory that can increase the value of the Portal for both e-business and intranet applications.” — **Aberdeen**

Find out for yourself why Intraspect's new IKS 2.5 is getting rave reviews from customers and industry analysts alike. For more information or to set up an executive briefing call 650.943.6033 or Email: briefings@intraspect.com



Power to the People

"A critical component of our business is trust," says Vince Hoenigman, a director for Proxicom, an e-commerce systems integrator in Reston, Va. "Clients need to know that we can provide them with the same level of quality, the same deliverables, no matter which one of our offices is working on their project."

One way to ensure that consistency, he notes, "is with a robust tool for pushing information across our worldwide operations. That's exactly what we get with Intraspect."

Intraspect Software, Inc., based in Los Altos, Calif., provides collaborative knowledge management software, which enables users to make faster, better decisions by connecting them with a "group memory" of relevant information and company expertise.

A systems integrator that develops

business-to-business and business-to-customer Internet-based applications, Proxicom began using Intraspect software after deciding it needed more power and flexibility than its own internally developed KM system could provide. The result, says Hoenigman, has been to "give power back to the people."

According to Hoenigman, "Intraspect is truly integrated into the way we do business. Sharing information is essential in the work we do; we want to know everyone is following the same strategy, has the most timely information and isn't out there reinventing the wheel."

In addition to providing a robust KM capability, Intraspect also enables users "to push information at those people who have an interest in that knowledge," says Hoenigman.

Intraspect is a big part of Proxicom's

training program. "We encourage new employees to access information online and review what others have done," says Hoenigman. "We also push information to trainees and know they are receiving it."

Intraspect software also lets the experts determine where information and knowledge should be directed. The software "is much more effective than any librarian system," says Hoenigman. "It allows the people working on a project—the folks who intuitively understand which of their colleagues would need or be interested in the knowledge they possess—to share the information quickly and easily."

Easy to use and install, Intraspect is an "amazing productivity enhancer right out of the box," Hoenigman says. "Intraspect is going to dramatically increase our quality and productivity."

portal (one that allows expertise to be contributed and networked throughout the enterprise).

A fourth possibility is an enterprise knowledge portal, which combines the attributes of information, collaboration and expertise. What HP is doing with its Portico project is an example of an enterprise knowledge portal. The enterprise knowledge portal is the portal of portals, hot-linking people to general corporate information, special interest portals and a variety of Web pages—all adhering to some standards and controls. It is also, according to Gerry Murray, director of KM research at IDC, "what will make the intranet investment pay off."

According to Murray, the grass-roots intranet and Web page efforts are not coordinated. "They use different terminologies, taxonomies and standards. None of the Web sites are intended for external consumption. The control processes of content management and Web publishing are not normally placed on internal Web efforts. But that is starting to change."

The new portal technologies are being used to create a desktop "cockpit" that gives each individual user everything they need to do the job in one place. "These portals don't have complete functionality, but they provide that single point of access into all the applications and collaborative

tools," says Jennie Grimes, director of e-intelligence solutions in HP's Business Intelligence Unit. "They also include the taxonomy for finding the inference capabilities that are required to personalize information and push out information to users."

There is also, between the portal and all the sources of data inside an organization, a layer of metadata "that understands where information is located and who the users are," says Grimes. "This enables companies to be proactive in distributing

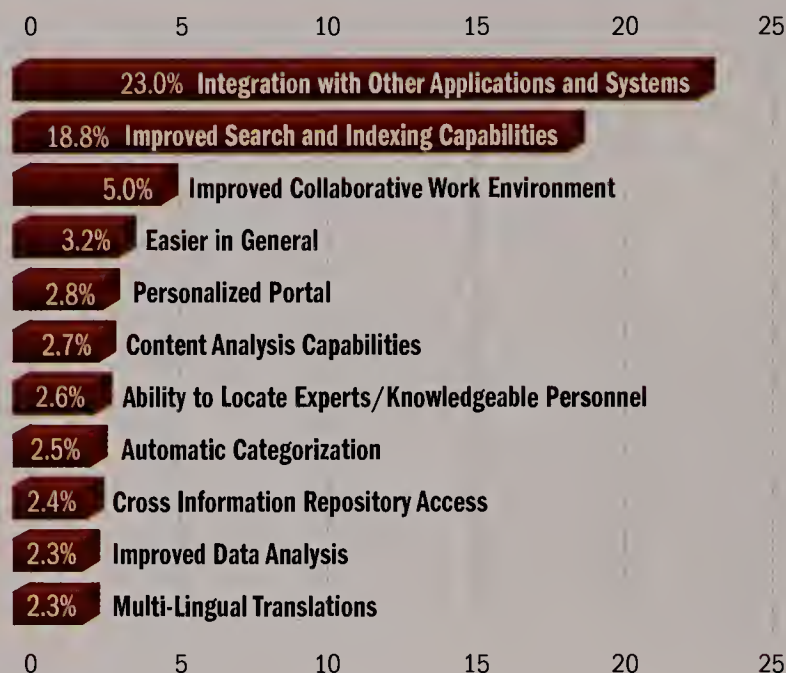
The enterprise information portal is, according to IDC's Gerry Murray, what will make the intranet investment pay off.

information, so they can offer employees new information to help them." Adds John Santaferro, product marketing manager at HP's Business Intelligence Unit, "With the metadata layer through the portal, you can begin to track activities such as procurement as well and set up alert systems when purchases of a product reach a threshold."

Supporting such a network involves major infra-

structure issues. "Search engines require considerable scaling for large-scale access," says Santaferro. "And storage requirements for them are massive." In particular, dealing with online documents is also causing storage requirements to mushroom. For HP, more

Corporate Portal Features Required



Source: Delphi Group 1999®

In a study of 300 companies, the ability to be integrated with other applications and systems was the feature in a corporate portal most wanted by IT managers.

than 11 terabytes of data are stored on a variety of storage systems in its data center in Atlanta, which handles as much as 1.3 terabytes of day per day. Add the 23 data warehouses maintained by HP, and you can see where the company gets its estimate that there are perhaps 10 terabytes feeding KM schemes.

Other Challenges

There are many other technological challenges involved in implementing KM, including the need to capture and integrate information in any format on paper, in microfiche, in e-mails and Word files; the ability to perform context-specific searches; and the real-time capture and sharing of the output of collaboration.

With the overload of information available today, companies engaged in Web-based KM need better automatic categorization and better navigational tools. "For instance, if you log on the Internet and do a search on banks, you get 500,000 hits, a linear list of URLs on river banks as well as financial institutions," says Barry Litwin, founder and executive vice president at Hummingbird Communications Ltd., a provider of business intelli-

gence solutions for the enterprise, based in Toronto, Canada. "You have to be able to categorize information sources automatically and get two lines, one that says financial institutions and one that says river banks."

No single vendor will supply all the systems and software required by portal architectures, says Litwin, but the portals will need to interface with existing systems and competing products that come into the portal infrastructure, such as document management systems, collaborative systems, data warehousing, business intelligence tools, search engines and categorization tools.

Litwin sees four critical elements for the enterprise knowledge portal.

1 *An enterprise table of contents*, which automatically categorizes corporate information. If a user points the table of contents at all information sources, it will produce a categorization tree that can be manually tweaked. Typically, search engines and KM products make things into knowledge maps pointing to physical locations, such as the Web, document repositories and data warehouses. "The table of contents brings it more in line with how you work," says Litwin.

2 *Corporations now use metadata* (historically considered the glue for low-level data, or data about the data) to provide relationships between systems and people. For instance, if a company has 25 databases, "one piece of metadata is a picture of the system administrator for that data with their phone number, so you can call at night when something goes wrong," says Litwin.

3 *A personal portfolio*. This includes the capability to aggregate all personal information for an employee in a single presentation space.

4 *The ability to analyze unstructured data*. Most insurance companies only keep 20 percent of their information in relational databases, where hard-core analysis can be performed. One way to do such analyses, says Litwin, is with good categorization and relevancy queries, which produce a result set based on a large amount of data, which is in turn transformed into a typical relational or multidimensional database. "You are looking for trends, say about a drug's use, in claims that have been filed according to patient or doctor, and you may

search all documents against 15 key words or phrases, such as 'reaction' or 'problem.'"

Searching and Categorization

Many CIOs have discovered a problem with enterprise information portals: No matter how usable or how personalized they are, users must still be persuaded to visit the portal in order to find all the valuable information on the intranet sites it leads to.

The problem is exacerbated by the fact that today's data consists of messy piles of prose rather than the neat fields that databases organize. The technology that can make sense of such information is sorely needed. The alternative is for an organization to employ scores of editorial assistants who spend countless hours reading, sorting and tagging documents so they can be stored in databases for retrieval. At that point, intelligent software can send users what they want to read, provided they've filled out lengthy questionnaires and checked all the appropriate boxes.

That was before software was created by Autonomy Inc., a San Francisco company whose ActiveKnowledge technology automatically analyzes the content in a user's active window—whether a word processing program, spreadsheet, browser or e-mail client—and simultaneously displays related content in a separate window.

A portal requires highly intelligent searching and categorization functions, and this technology, which previously was available only in proprietary KM systems, is now a part of generic software packages, according to Mike Lynch, managing director and CEO of Autonomy Inc. "These generic packages allow KM technology to be installed very quickly at much lower cost, and this has led to a sudden explosion in the growth in the KM marketplace," says Lynch.

The building blocks of this new generation of KM systems are categorizing (the ability to read a page and work out what it is about), hyperlinking (the ability to read an article and say "also look at this report"), searching in natural language, profiling (the ability to help a company understand what a user is interested in) and alerting.

According to Lynch, the key to this new generation of KM systems is server-based software that can read documents in the document server, or e-mail in the e-mail server, and can bring all that information together as one consistent knowledge base. This software technology, which can read a paragraph of text and understand what

The Ten Domains of Knowledge

According to Dan Holtshouse, Xerox director of business strategy knowledge initiatives, there are ten domains of knowledge which give structure to the activities around which KM plans should be built.

Companies that have mastered these domains are *promoting knowledge sharing and best practices, making that sharing an enterprise-wide responsibility, and capturing and re-using past experiences.*

They are also *embedding knowledge in their products, services and processes.* The World Bank is doing this. "Instead of focusing on lending, The World Bank wants to be thought of as a place where you can get expertise on how to use money," Holtshouse says. "In all the countries they work in, they want to capture the best practices that have been developed and make them available worldwide. They are putting in the infrastructure and bringing together the communities so that expertise can be made available on the Web site."

The fifth domain is *knowledge as a product.* Consulting firms are

Types of Knowledge Initiatives



Source: Xerox Corporation

increasingly selling knowledge through the Internet. Manpower, the global employment agency, says Holtshouse, places two million people a year. "They know more about those people than their customers do. They are working with companies like IBM to build Web sites inside the firewall so IBM can see worldwide full profiles of people Manpower has supplied them."

KM leaders are now *building and mining customer knowledge bases, mapping the knowledge of experts, and mixing explicit and tacit knowledge to achieve innovation.* Finally, they are trying to *manage their intellectual assets* and—most difficult of all—are *laboring to measure the value of knowledge in all its forms.*

Metropolitan Life Puts Customer Service on the Fast Track

Metropolitan Life, a major insurance company based in South Africa with more than 224 branch offices, had a problem that was hampering customer service in its life insurance business unit. Every internal customer inquiry required searching either through paper documents or an unwieldy microfiche library containing 31 million images.

More than 30 employees were dedicated to searching, retrieving, copying and creating microfiche records. They could fill an urgent document search request in an hour, but non-emergency routine searches required three hours and that figure went up whenever more than one employee requested the same file. The phone system added to the problem. Returning customer calls in Cape Town was time-consuming enough, but in regional offices, where residential phone service was not available, the

problem escalated. . . severely.

It was time for a change. MetLife decided to install a capture system to convert all paper documents and archived microfiche-based images into readily accessible electronic data. It wanted a proven, robust system that could be easily operated by employees but that also could run unattended overnight. In addition, the system had to be able to convert more than 150,000 documents per day, support prioritization of documents for faster processing, and allow client files to be subdivided by policy and document types. MetLife also wanted a system that could scale to meet the needs of all six of its business units.

Based on the advice of its systems integrator, Xcel Information Technologies, MetLife chose InputAccel, a suite of information capture products from Input Software, Inc., in San Jose. The suite could capture the 80,000 paper docu-

ments MetLife received daily and could convert its microfilm image library. Images and index text from both sources are transported to a Documentum Enterprise Document Management System.

Customer records are now literally instantly accessible. With customer response time slashed from hours to seconds, employees at MetLife's corporate headquarters in Cape Town now have time to provide greater support to regional offices. MetLife customers, regardless of location, receive prompt service, and urgent internal document processing requests are handled with minimal disruption.

"InputAccel is an industrial-strength solution that can cope with our volumes and needs," says Jan Cronje, project manager at MetLife. "Now our employees can instantly access customer information, dramatically cutting response time and boosting overall productivity."

it is about, does not rely on metadata. Accordingly, because the system no longer relies on formatting information, "it can go straight into repositories or databases or read all the documents on the Web processor server," says Lynch. In addition, rather than type in a key word, the user can type in a whole paragraph to become more precise on what they are searching for. Finally, rather than force employees to stop what they are doing to log onto a system to perform a search, the new KM systems will bring the information to them, he says.

Journals of Collaboration

In time, KM technology will lead to the automatic preservation of the journal of how people work alone (or together) to get things done—what happens between an idea for a product and its delivery; between the creation and completion of business plan; between the start of a consulting project and the implementation. "This is the kind of incredibly valuable information that is being lost and not captured," says Jim Pflaging, president and CEO of Intraspsect Software Inc., a provider of collaborative KM software based in Los Altos, Calif.

Intraspsect's flagship product, Intraspsect Knowledge Server, is a collaborative environment for collecting, finding and re-using information. The product delivers a single, personalized interface to any digital content, such as reports from enterprise applications, documents and e-mail, organized into secure, topic-specific folders. Intraspsect Knowledge Server encourages and facilitates user participation and captures how information is used to make decisions.

Pflaging recalls the recent occasion when he hired a new vice president, handed him the corporate business plan and told him to go into the corporate "group memory" on a central server and pull up the business plan folder. In it were all the documents, conversations and e-mails that had been generated in the process of creating that plan. "He came back and said he learned more about the company from that information than any business plan could ever teach," says Pflaging.

What is required, he says, is a system that captures this material "in the course of doing work, whether you are working in Word, Powerpoint, Excel or e-mail. With a couple of keystrokes, you can save it in a public or private place on the com-

Input *Accel*

Your organization runs on knowledge. It fuels every process

and decision. But some of your organization's most useful information is hidden inside documents. Fortunately, there is InputAccel®, an extraordinary information capture system. It digitizes information so it can be fed to computers and shared throughout your organization.

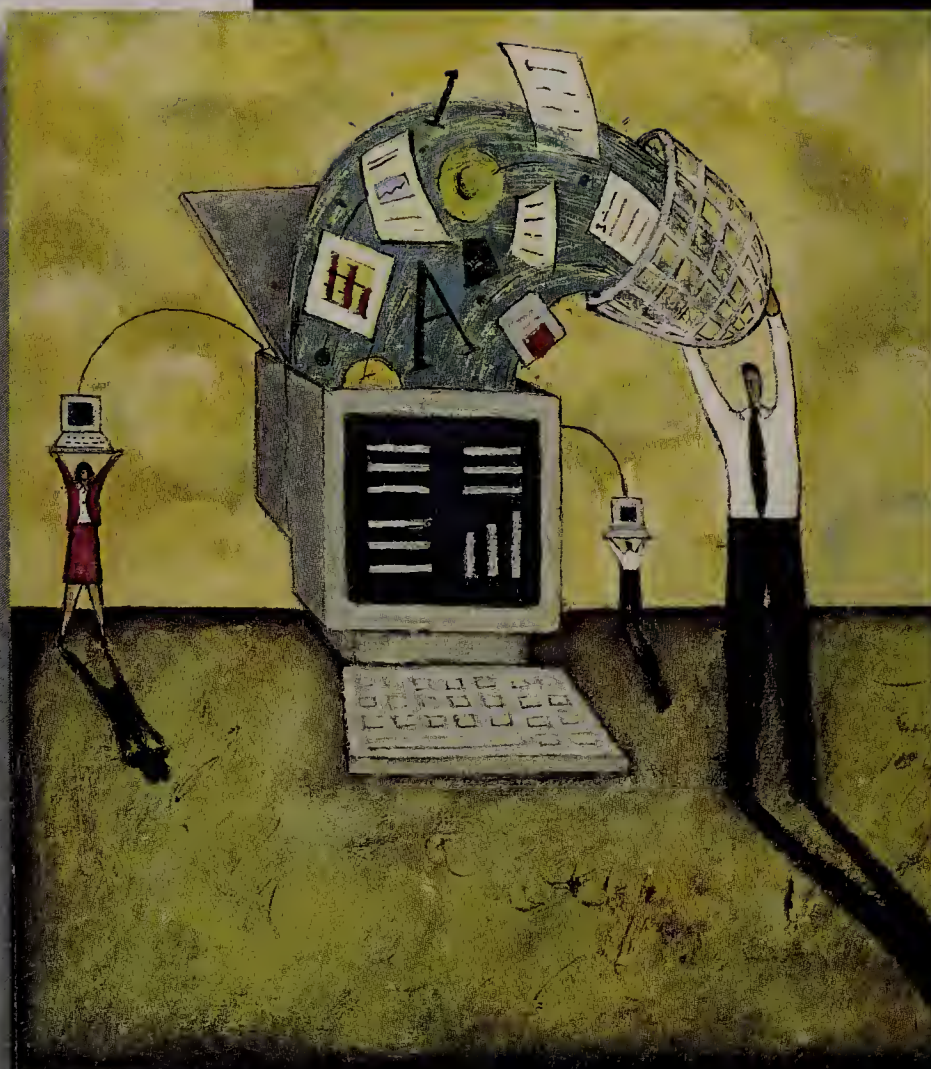
What makes InputAccel so powerful? It's client/server architecture and customizable capture flows can handle large volumes of complex documents. And you can add modules and workstations as needed. InputAccel is very scalable and fully-Windows NT™ compatible. You'll enjoy fast processing, no loss of data, and a system that can grow over time.

InputAccel can handle everything from on-demand scanning to high-volume production capture. You can capture documents wherever they arrive. And forget time-consuming document sorting. InputAccel can transform a mix of document types and sizes into digestible data.

When you want to scan documents over the Internet, InputAccel is up to the task. It has an asynchronous protocol, built on top of TCP/IP, for fast processing with no compromise in data integrity. Plus batches can be compressed for network transfers. Save in your choice of file formats and deliver directly to a Web site or FTP directory.

Ready to help your organization work smarter? To see how others have used InputAccel to harvest data from documents, order our InputAccel Info Center CD. Visit www.inputsw.com/cio or call 800-371-3783 – or 408-325-3950 - to request a free copy.

Starved for Knowledge?



Feast on data from documents.



"are you telling me we didn't send product information to Mr. Thomas last year?"

"we didn't see much potential in his small start-up, sir."

"what's Mr. Thomas up to now?"

"um, he lives on his yacht – it's more like a cruise ship. he moved his offices on board, he doesn't like to commute."

"I see."



Stop missing the boat. Turn to SolviturSM – Market Management Solutions for Customer Relationship Management.

The Solvitur process from Acxiom[®] Corporation provides enterprise-wide CRM solutions that can help you maximize customer contact at every touch point.

The Solvitur modular approach to Customer Relationship Management is customized for your industry and your specific needs. Solvitur can be accessed right from your desktop and can integrate customer information from business and operational systems. And it can be managed in-house—or on deck.

To learn more about Solvitur solutions, contact Acxiom: 1.888.3ACXIOM, or e-mail us: info@acxiom.com. We'll help put you on a steady CRM course.

PRIVACY ASSURED

ACXIOM
www.acxiom.com

Acxiom is a registered mark of Acxiom RTC, Inc. and Solvitur is a servicemark of Acxiom Corporation

pany's intranet, a place called group memory. This is a shared workspace with any level of access control and workspace."

The issue is how to capture online work so that others can use it. "Companies are beginning to realize that if you make it easy for people to contribute and share context-specific folders or topics directly from the desktop or e-mail, they will do it," says Pflaging. "Every worker can set up their own folders and workspace, each with its own e-mail address. Each threaded conversation has its own e-mail address."

Many companies are employing such technology capture techniques. SAS Institute is helping non-technical users learn how to use business intelligence tools by giving them access to the folders that contain the processes employed by the corporation's power users. And OneMail.com, a leading Internet service provider, is using this technology to track the progress and assimilation of the employees at companies they have acquired.

Capture the Information First

"Most companies don't have good knowledge

bases. KM will only be as good as the knowledge base you build," says John Stetak, vice president of marketing at Input Software Inc., a San Jose provider of software that performs and manages information capture. The first step in building a knowledge base, he says, is to capture large volumes of structured and unstructured information that exists on paper, film, faxes, microfiche and

"Most companies don't have good knowledge bases. KM will only be as good as the knowledge base you build."

photos, and convert it into a digital format readily accepted by back-end applications, such as the document management and enterprise resource planning systems—even a Web site.

According to Stetak, the framework required to manage this capture process has to combine image capture, data capture (extracting machine-readable

Construction of Global Database Solves Marketing's Problem

Like many manufacturers, 3Com Corp. found itself wasting resources over-marketing to some prospects and under-marketing to others. So in 1997, Pam Hudson, 3Com's global database marketing manager, took on the challenge of building a global 3Com marketing database in one year. Hudson determined that to be successful, the system, dubbed Direct Touch, would have to be global, the refresh cycles would need to be short, and the users' tools would need to be Web-based.

One of the few outside vendors with the ability to work with 3Com on all these requirements was Acxiom Corp., a Little Rock, Ark., supplier of data warehousing and data integration solutions. The company offered a plug-and-play marketing management solution called Solvitur, which a customer could customize in terms of adding tools to it. "Acxiom had the international presence, the Web-enabled tool set and the bench strength for building the new

components that did not exist in the marketplace," says Hudson.

Together with 3Com and consulting firm Gnomix LLC, Acxiom took the first step in creating the database: developing a data model that could accommodate up to 50 worldwide data feeds and could build records around different data elements, depending on which communications channel the customer information was derived from: e-mail, direct mail or telephone.

3Com's determination to forge a universal data record standard was a key factor in ensuring the acceptance of the database by users across the organization. In addition, Acxiom integrated a customized 3Com interface within its Solvitur solution. Components of Solvitur handle the full cycle of campaign planning, list selection and execution via mail or electronic marketing channels. The solution also helps users produce consistent reports worldwide. "One of the advantages the database has given us is the ability to

get a clear view across customer relationships on a global basis," says Hudson.

Direct Touch went live in early 1998. Today it plays a key role in 3Com's marketing efforts, having helped to reduce marketing costs by up to 85 percent on some campaigns and enabling 3Com to forge strong relationships with customers. "We reduced overall marketing costs by 10 percent or more, and improved marketing efficiency by at least 20 percent," says Hudson.

Direct Touch is also expected to play a supporting role in 3Com's sales and e-business initiatives. "We can now execute a global, Web-based database strategy," says Hudson. "We can send out customer communications in a moment's notice, plan and execute ongoing communications, deliver electronic database-driven programs, track program results and begin to do the segmentation for all of our markets worldwide. What's more, our e-mail campaigns are consistently returning high response rates."

information from the image) and export (making the image and data compatible with the back-end systems). Until recently, such solutions were available only at a high cost from a systems integrator, but in the past few years, sophisticated open software packages that perform these functions have begun to appear on the market.

In the process, the rapid transformation of documents into digital information has become a multipurpose resource for the enterprise. For example, the invoice repository drives payables, but that same document can be put into a marketing knowledge base and be used by customer support personnel to help identify buying patterns. "I can touch that document one time and put it in all the places it needs to be," Stetak says. "I can place it in a document management system and give the pointer to a database application so that information can become interlinked."

Remote scanning is another trend in document capture. Companies have traditionally relied on centralized production groups with high-volume

scanners. Now they want to capture documents such as freight bills at the point where they enter the organization and send them over the Internet to central facilities, avoiding the delays, and resulting costs, of shipping them to the centralized production groups.

Workforce Management

Another element of KM has to do entirely with the management of the workforce. Managing the workforce entails not only knowing about the time and resources that employees consume, but also the content of their work. It involves integrating structured data with less structured data—statements of work, contracts, engagement reports and status reports—all with the ultimate purpose of "helping employ-

ees make judgments," says John Lucas, president and CEO of Account4.com (a division of Work Management Solutions), in Newton, Mass.

Workforce management is also a means of understanding how people do their work and using that

The rapid transformation of documents into digital information has become a multipurpose resource for the enterprise.

Leveraging All of a Company's Intellectual Assets Automatically

According to some estimates, more than 80 percent of employees waste, on average, 30 minutes each day simply retrieving information.

British Aerospace believes it. The defense and aerospace company knew it was sitting on an information gold mine. Unfortunately, the wealth of information sources available to its employees was hampering, not enhancing, productivity.

The goal of Autonomy Inc., a provider of intelligent searching technology based in San Francisco, was to help British Aerospace reduce the time employees spent searching and surfing for the information they needed to do their jobs. Its strategy was to anticipate employees' information needs via timely personalized reports and to create a corporate portal so easy to navigate that employees would no longer waste time search-

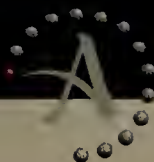
ing for the information they needed.

The first step was to make information easier to find. To accomplish this, British Aerospace used Autonomy's technology to integrate all internal and external information resources for two of its departments: Corporate Communications and its Center for Excellence—The Virtual University. The result: easy-to-navigate, Yahoo-like topical directories. To make it even simpler for employees to home in on what they were looking for, British Aerospace used hypertext links throughout the corporate portal. Finally, personalized reports and alerts were used to ensure that employees stayed up to speed on job-related developments.

British Aerospace was able to provide these information services—corporate portals packaging the best of the Web

and the company's internal resources, and personalized reports alerting employees to breaking developments—without having to hire armies of consultants or burdening existing staff. That's because Autonomy's technology is powerful enough to automate some of the most labor-intensive tasks associated with building and maintaining these kinds of services, from categorization, tagging and linking large amounts of information to creating customized reports.

Autonomy has already improved cross-enterprise access to the wealth of information available from the Web and within British Aerospace's databases, file servers and desktops. By implementing Autonomy's solution, British Aerospace expects to significantly reduce the time employees spend retrieving important information.



In 500,004 B.C., Og experiences early personalization.

In 1999 you have Autonomy.

Og had it tough. When he wanted personalized information he had to match his special interests with the vast flow of information by hand — painfully, by trial and error. Autonomy does it a new way: Automatically.

Autonomy's knowledge automation software monitors the interests of its users — automatically creating, updating and managing individual user profiles. Autonomy continuously categorizes, cross-references, tags, hyperlinks and delivers information custom-matched to each user's interests profile. Automatically. On the fly.

It even alerts users to the arrival of new information that matches each user's profile and suggests related documents or subject matter. Autonomy can also use

these profiles to automatically connect people with similar interests, making things happen quicker.

Autonomy has found a way of making computers understand meaning, pure and simple. It's the kind of understanding that delivers the right information to the right person at the right time. For more information visit our website at www.autonomy.com or call us toll free at 877.243.9955.

Knowledge Automation & New Media Solutions.


Autonomy®

information to create tools that help new employees progress more rapidly. It can also serve as a solution to the problem of "expertise walking out the door" when employees leave a company, says Lucas.

When information about the workforce is aggregated, it improves knowledge about skills and expertise levels, general productivity and decision-making abilities. When the logs of similar projects are

categorize, aggregate, analyze and segment.

According to Subhash Gupta, E-business leader for Acxiom Corp., a provider of data and database products in Little Rock, Ark., this is the most crucial element in the move toward the personalization of products and services. "Integration will be the Achilles heel in the entire electronic business space," says Gupta. "We need to integrate information about the customer and channels of communication with the customer, so that the message to them is consistent."

This calls for a great deal of technology and expertise in gathering total customer profiles. It includes not only demographic and psychographic profiles, but a complete profile of the customer's specific relationship with the company, which may range from purchase and credit history and profitability analysis to all forms of communication across all the company's channels, including the retail store, the catalog, the telemarketing center and the Web site for e-commerce.

"While you are clicking through their Web sites, dot.com companies are collecting information," says Gupta. "How can that information be integrated with existing information in such a way that a product or a service can be customized for the consumer? That will be the smart content in the future."

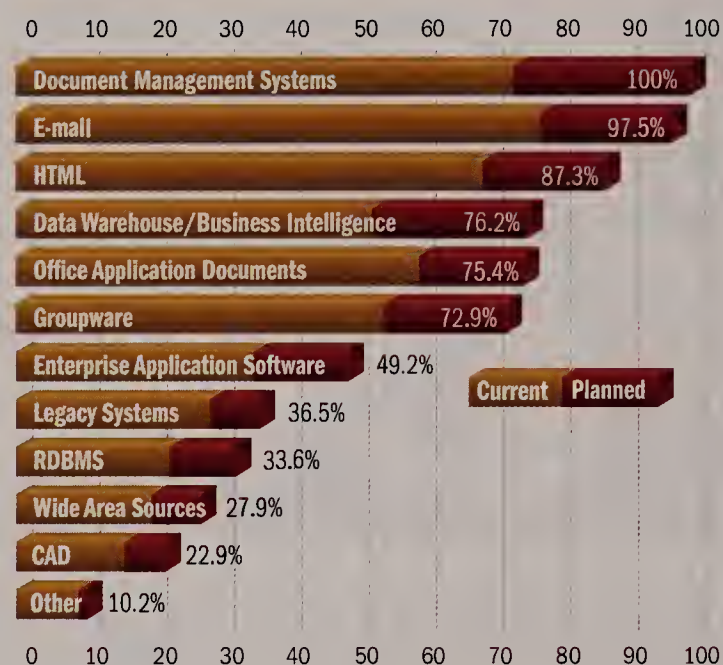
This will also be the future of customer database specialists, who will integrate the many levels of information they have gathered on individuals, businesses and customer segments with the corporation's customer information files to come up with highly sophisticated profiles of customer behavior and needs. Given the volume and complexity of information involved, Gupta believes that companies will go to the database service providers to help them turn all that information into actionable knowledge.

Reducing the Knowledge Deficit

So, after all of this, how do we define knowledge management? It is information in action, information in context, data warehouses mined and turned into gold, and customer information turned into loyal, profitable customers. It is collaboration and the record of collaboration. It is the capturing of the essence of knowledge—the experience, learning and wisdom of people: employees, engineers, inventors, consultants and service representatives.

It is about putting together the right combination of business objectives, culture, and infrastructure to support the knowledge-based enterprise. It

Planned Integration of Information Sources



Source: Delphi Group 1999*

In its study of 300 companies, document management systems and e-mail represented the most widely integrated information sources in an enterprise.

viewed, a body of experience is built. "With workforce management systems, companies can create templates of accumulated knowledge, for the basis of planning, bidding, and costing," says Lucas. They are also a means of retaining and building upon the valuable work of temporary cross-discipline teams, such as those for business process reengineering."

This technology has been evolving for decades, says Lucas, but with the technology of the Web converging with the capabilities provided by KM to bring all forms of information together, "we have an opportunity to realize the potential of workforce management."

Managing the Customer Relationship

Handling the entire customer relationship is a knowledge-intensive application that calls for the full gamut of applications for capturing information from a variety of sources and providing the tools to search, access, query, mine,

consists of documents and document management systems, data and data warehouses, enterprise information portals, search engines, business intelligence tools and collaborative tools.

But for most companies, the inability to exploit all the internal and external information resources available to them—human, electronic and paper-based—is costly. IDC has come up with a metric by which to measure this knowledge deficit. This knowledge deficit metric captures the costs and inefficiencies that result from intellectual rework, substandard performance and the inability to find knowledge resources.

According to IDC's Murray, the knowledge deficit among Fortune 500 companies costs them, conservatively, \$12 billion annually. Furthermore, given the sluggish state of adoption of KM strategies and technologies among most companies, he says that figure may grow as high as \$31.5 billion by 2003.

To determine a KM strategy that can reduce this deficit, says Murray, companies need to appraise the nature of their business, their corporate culture, their technology infrastructure and their business objectives. The key, he says, is the corporate culture.

"Consider two manufacturing plants down the

street from each other, both making the same product, but each rewarded on market share," says Murray. "In this situation, the employees of both companies don't talk to each other. In most companies, the financial system is the stone in the pond from which all political problems emanate.

In most companies, the financial system is the stone in the pond from which all political problems emanate.

If it encourages that employees withhold information and build ivory towers, that company—competing in a knowledge-oriented economy—has a potentially fatal flaw."

Companies must ask themselves if they have a culture that encourages sharing and cross-pollination; that gives employees different experiences to break them out of silos; and that breaks the mentality of networking within 50 feet. And if the answers are yes, yes and yes, then the company can be-

The Role of Scanners in KM

As a leading supplier of office automation equipment, Ricoh Corp. understands the critical role that high-speed, high-quality document image scanners play in the corporate knowledge management food chain.

In fact, the company, which sells its flatbed image scanners to integrators and VARs to incorporate into their KM solutions, has watched its business in this arena grow nearly 30 percent annually in the past three years.

As sharing of information across offices and time zones becomes more important to the success of a business, KM will continue to be a hot-button issue for CIOs and IT departments. And since many critical business documents, such as legacy documents, printed artwork and photographs, are not created electronically, the need for a high-tech solution to KM is becoming increasingly apparent.

For example, the legal, medical and financial industries have been especially quick to adopt solutions that incorporate state-of-the-art imaging technology. In medical offices and hospitals, where forms processing is especially heavy, a scanner solution that captures form data without the repetition of each entry box on the form helps users expedite the processing of forms.

In the legal and financial communities, where the requirement exists to keep accurate and comprehensive records of past payments and court cases, KM solutions have played a pivotal role in streamlining record-keeping and research functions.

Until the business world enters a time when all correspondence and records are electronically created, the ability to digitize documents will be step one in any KM hierarchy. "Businesses need to look at the type and volume of docu-

ments they want to capture, as well as the speed at which they must be translated into readable digital files, says Cory Gault, Ricoh's national sales manager, System Support Group. "Document management software may be the foundation of many KM solutions, yet scanning technology is what makes a significant percentage of that document management possible."

Ricoh offers a spectrum of document and image scanning solutions, ranging in speeds from 20 ppm to 100 images per minute. Several models feature duplex scanning (for double-sided documents), and all are compatible with TWAIN and ISIS interface standards. Ricoh, headquartered in West Caldwell, N.J., is a subsidiary of Ricoh Company Ltd., a leading supplier of office automation equipment. More information about Ricoh solutions can be found at www.ricoh-usa.com.

Enterprise Information Portal Quickens Search of Data

To an HMO or large hospital group, efficient treatment of disease is the paramount goal.

But that goal may be hard to achieve when details of treatments for particular ailments are lodged in several different computer systems. For instance, patient registries may be stored in a mainframe system, information about dispensing medication may be contained in one or more databases, and patient records may be stored in a document management system.

So a researcher looking into treatments of an ailment would face a daunting challenge when pulling together data from these disparate sources, let alone detecting trends in treatment outcomes that may yield alternative courses of therapy. Without a knowledge map to bring these sources together, the analyst must log into three or more systems and use that many different applications to extract the needed data. The person could potentially spend more time leaping technological hurdles than doing their real job: finding ways to help people get better faster.

But with the Enterprise Information Portal from Hummingbird Systems Ltd., a provider of business intelligence solutions for the enterprise, based in Toronto, Canada, the same analyst can have access to all the relevant information through their Web browser. The product's unified interface offers:

- A single security log-in to all relevant data sources
- Access to document repositories, mainframe and Unix applications, and relational or multidimensional databases
- A search engine that automatically categorizes and summarizes results
- Query, reporting and multidimensional analysis capabilities
- Access to advanced data mining results
- Metadata describing data lineage and history

Logging into the Enterprise Information Portal, the analyst can review a report summarizing treatments for the ailment and identify a relatively low re-admission rate for patients in a given hospital. Probing further, they may see that this trend holds true even when doctors, treatments and length of patient stay are varied. A search against patient records may reveal that a particular drug was prescribed and that a lower dose of the drug administered more often is more effective than a larger dose once per day.

The analyst could then relay this information to the patient registry system, so that in the future, doctors would be alerted to the alternative medication regimen at registration time.

With the Enterprise Information Portal, all this can be accomplished over the Web in a single session, allowing users to focus on applying their knowledge and expertise to patient research, rather than tedious systems work.

gin to put in place the infrastructure to allow employees (perhaps tens of thousands of them) to share documents, data and ideas; create project teams; and communicate with customers. This infrastructure will include accessible transactional databases and decision-supporting data warehouses, the document capture systems, the networks, the security systems and groupware.

In the not-too-distant future, according to Murray, knowledge management, its concepts and technologies, will begin to be absorbed into all processes of an enterprise: the product development life cycle, the management of the customer relationship, the transactional and planning processes, and the management of the end-to-end supply chain.

Companies and individuals will assume they have a knowledge-based culture, and they will regularly mine not only data, documents and other media, but also the journals of individuals and teams. In short, every time a company buys a system—a set of integrated applications—to automate any of its business processes, knowledge management will be a part of it.

Want to Know More?

If, after reading this White Paper, you're looking for more information on the subject, check out the Knowledge Management Research Center on the CIO Magazine home page. The KM Research Center can be found at www.cio.com/forums/knowledge.

The Center allows visitors to call up articles on the subject of knowledge management (KM) that have appeared in CIO Magazine and CIO Enterprise, as well as in other publications, both print and online. Articles currently linked to the home page include two recent stories from CIO Enterprise, one that reports on how much money corporate America is wasting money on online information services, and one that looks at KM consultants, and what they can offer to a business.

The Center also provides a list of online resources, including forums and publications, related to KM; a calendar of KM-related events; and a listing of KM-related vendors.



Are you controlling data, or is it controlling you?

With Hummingbird Genio,[™] you get more than data.
You get clean, accurate information *when and where* you need it.

Today, having the data isn't enough. You've got to be able to control data exchange across different systems in multiple locations – quickly and accurately. That's why you need Hummingbird Genio, the leading broker-based universal data exchange solution. Genio provides a full breadth of transformation support to achieve a single version of the truth across the enterprise. Genio performs data exchange from any source to any target using a procedure-driven graphical environment. Its hub-and-spoke architecture gives you unparalleled control and flexibility. And it provides complete impact analysis, data lineage and audit trails to help maintain data integrity. Best of all, it will reduce your total cost of ownership.

**Take control of your enterprise's information.
Contact Hummingbird today.**



HUMMINGBIRD

tel.: (416) 496-2200
fax: (416) 496-2207
e-mail: info@hummingbird.com
www.hummingbird.com/g/cio

RICOH[®]
Image Communication



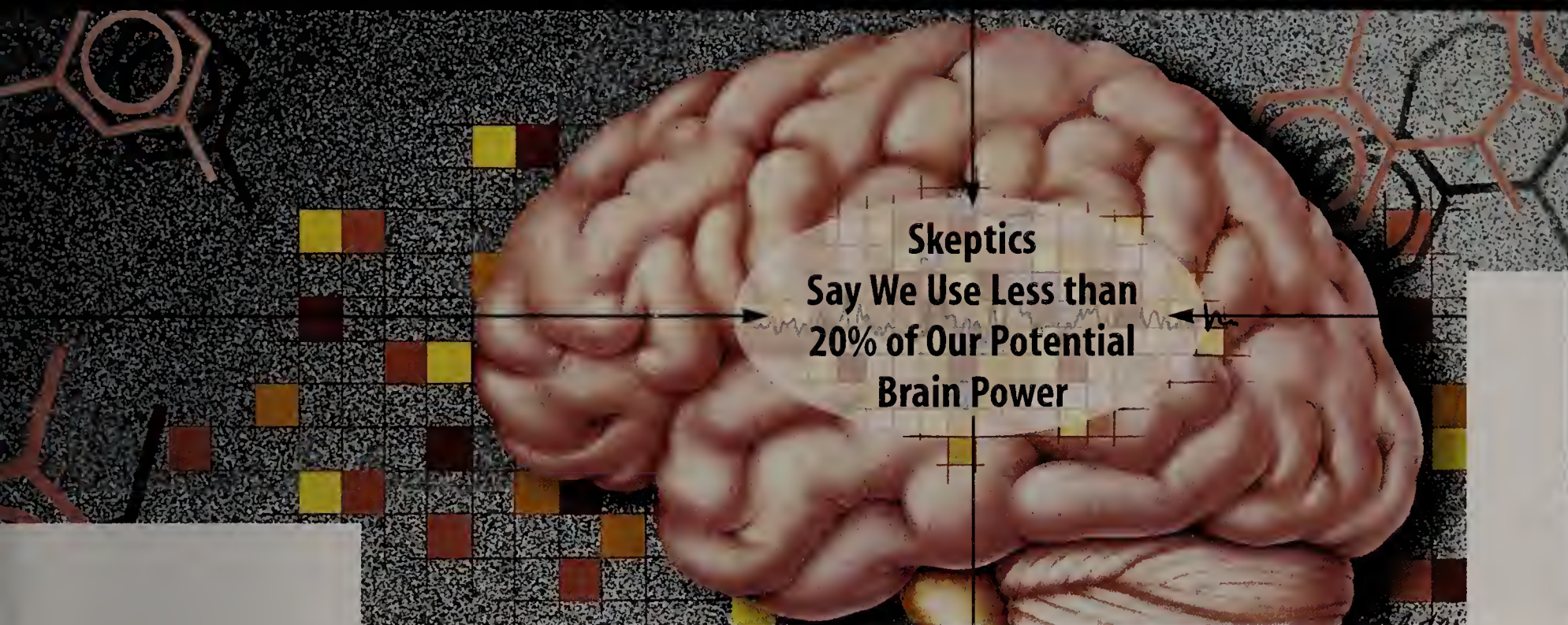
hot water ►►

When things heat up, you know that's the true test for any digital solution. The Aficio line of integrated digital imaging systems is more likely to meet your company's needs than any other. And you know that keeps things cool. For everybody. [those who know demand Ricoh]

Aficio[™]



800 63 RICOH
ricoh-usa.com



**Skeptics
Say We Use Less than
20% of Our Potential
Brain Power**

"It occurred to me that I have paid consultants many times the cost of this software on many contracts throughout my career, and have received a lot less usable information."

Carol Naughton
Product Reviewer
SIGCAT Foundation

"Thanks to the validity of the information presented, the CIO ConsultWare Series IT strategy product has proven to be literally worth its weight in gold."

Edwin L. Martinez
Director, Management Info. Systems
Micro Optics Design Corporation

"With today's staffing challenges, this CIO ConsultWare product really belongs in the hands of IT executives everywhere. We may not be able to fix the IS staffing crisis, but at least with products like these, we can level the playing field considerably."

Angelo Privitera
CIO
HDR, Inc.



CIO ConsultWare is produced jointly by CIO Communications and ICEX, an independent research firm.

Imagine What's Possible if You Could Access the Rest...

Now it's possible to increase your knowledge base by accessing vast amounts of best practices, models and methods without ever leaving your desk—and within moments of when you need it. The authors of the CIO ConsultWare Series have filtered and aggregated key information so you use your time and resources wisely.

Packaged intellectual capital, in the form of benchmarking reports and searchable CD-ROMs, provides you with the focused knowledge you need on the critical technology management issues necessary to enhance your company's productivity and bottom line.

Topics currently available for purchase:

- NEW** IT Standards Strategies for CIOs V.2.0 for \$2,295
- ▶ Implementing IT Strategies for CIOs for \$2,295
- ▶ IT Staffing Strategies for CIOs for \$1,995
- ▶ Intranet/Internet Strategies for CIOs for \$1,495

For more information or to download a demo, visit our Web site at **www.cio.com/consultware**



To order any CIO ConsultWare Series research products, contact Dot Caspersen at **800-726-3090** or email your inquiry to research@cio.com.

Plugged In



Sharing Information

Quantifying KM

THOUGH COMPANIES HAVE YET TO PRODUCE solid metrics for knowledge management programs, Eckerd College's Human Resource Institute (HRI) in St. Petersburg, Fla., quantified the value of KM and intellectual assets to businesses in a study conducted last winter. HRI asked human resources managers at Fortune 500 companies to rank the importance of KM and intellectual capital on a scale ranging from extremely important to not important. The 221 respondents, who represented a wide variety of industries, also gave feedback on the programs their companies have launched to promote environments conducive to sharing information. The bottom line: Though over three-quarters of the respondents consider both KM and intellectual capital important to their business, they're not doing much in the way of promoting it. Here are the key findings.

77 % of respondents consider KM and intellectual capital extremely important or important to their businesses.

I.T. Staffing

Labor Pains

IF THE IDEA OF TEMPORARY HIRES FOR YOUR COMPANY'S IT staffing problems seems like applying duct tape to a crack in the wing of a 747, you might want to take another look at short-term help as a long-term solution.

One company supplying temporary IT personnel as well as workers in fields as diverse as accounting, engineering, financial services and health care is Adecco SA, a global staffing organization based in Lausanne, Switzerland. It maintains a client roster that includes Fortune 50 companies as well as Silicon Valley startups. Its IT services group had estimated sales of over \$1 billion in 1998, and the company now supplies between 7 percent and 9 percent of the worldwide market for IT staffing.

"Companies cannot train their people as quickly as the technology is changing," says **Peter Pfister**, Adecco's president of professional staffing and service. That's why his company's IT group is feeling mighty good about the future: A 1998

PaineWebber report called "The Staffing Industry" estimates that IT's share of the overall staffing market is expected to grow at a rate of over 25 percent over the next two to three years—outpacing all other industry sectors.

To gain IT workers in such a hot market, Adecco uses proprietary technology. For example, its JobShop kiosks, which are located in malls and department stores, link prospective employees with Adecco's network of opportunities.

Once the company hires new employees, its Xpert testing system measures their skills and aptitudes, and matches the employees with the appropriate job training and assignment. The result: Adecco claims that its hiring processes ensure that the 2.5 million people it puts to work each year meet the exacting standards of its clients.

Unlike many temporary agencies, Adecco hires its IT staffers as permanent workers: "One way we keep our employees is by hiring people full time, while also providing better benefits," says Pfister. With such a huge client base, he adds that staffing companies such as Adecco need to provide continuity toward the clients and supplying knowledgeable and well-matched employees helps keep clients coming back. —Tom Wailgum

3 % deem KM or intellectual capital unimportant.

17 % have appointed a chief knowledge officer or someone to head KM programs.

19 % have implemented a formal KM program.

40 % provide training, mentoring and development programs to foster information sharing.

34 % of responding companies reward employees with bonuses for sharing information.

2 % have developed techniques to measure intellectual capital.

For more information on the study, visit hri.eckerd.edu.

We didn't want a
vendor, we wanted
a one-to-one
relationship.



Dell PowerEdge® 6350 Servers

And that's exactly what you'll get. It's just you and us. And we're fully accountable.

We've got scalable server and storage enterprise solutions for any size business. We'll help you with hardware installation, custom integration of software, same-day, four-hour service*, E-support and more. Learn more at www.dell.com/services.

At Dell, being direct isn't a shortcut; it's a philosophy of creating value for every customer.

To see the value we can create for your company, we'll have a team of professionals come and see you. Or, give us a call toll-free or visit our web site.

And let's start our relationship.

1-877-429-DELL
www.dell.com



Dell offers a complete line of Intel®-based systems, including the Dell PowerEdge 6350 Server. This monster can accommodate up to four Pentium® III Xeon™ processors, 4GB of ECC memory and seven hot-plug-ready PCI slots.

*On-site service may be provided pursuant to a service contract between Dell and a third-party provider, and is not available in certain areas. Technician will be dispatched if necessary following phone-based troubleshooting. Intel and the Intel Inside logo are registered trademarks and Pentium III Xeon is a trademark of Intel Corporation. Dell and the Dell logo are registered trademarks of Dell Computer Corporation. Be Direct is a trademark of Dell Computer Corporation. ©1999 Dell Computer Corporation. All rights reserved.

BE DIRECT™
DELL®
www.dell.com

Engineering and Technology

A College Is Born

AT THE MOMENT, THE FRANKLIN W. Olin College of Engineering has no buildings, no faculty, no students and only three employees. But that should change in 2001, when Olin officially opens for business.

The four-year residential college, under construction in Needham, Mass., isn't part of any other college or university, making it the first new independent engineering school in four decades. Olin plans to admit 50 to 100 freshman its first year, says Dean of Admissions **Duncan Murdoch**. Total enrollment will reach 650, the planned maximum, by 2007.

Why launch a new college as others nationwide merge, consolidate or even shut down? Marketplace demand. Employers want engineering grads with up-to-the-minute technology skills, which may be tougher to find in bigger, less-nimble and more traditional engineering programs.

"Here's a school that's going to be small and quick—quick to change, quick to adapt, quick to innovate," Murdoch says. "If some major technology breakthrough happens in the next two years, Olin College is going to be able to design that right into its initial curriculum." In addition to hiring full-time faculty from other engineering schools, Olin is also recruiting part-time instructors from Boston-area companies to provide real-world perspective about business and IT topics. President **Richard Miller** adds that the school will focus on entrepreneurship as well. Rather than sitting all day in lecture halls, for example, students might find themselves assigned to project teams that, like their real-world counterparts, include managers, deadlines and budgets.

Olin's specialties will be mechanical and electrical engineering and computer science, including software engineering and Web courses. Miller, formerly dean of the College of Engineering at the University of Iowa, says that, at least initially, Olin will steer clear of graduate-level programs and research: "Undergraduate education will be our passion."

Financing the private college's startup is a \$300 million grant from the F.W. Olin Foundation, a New York City-based educational organization founded in 1938 by the successful engineer and industrialist.

Obviously, admissions counselors will look hard at prospective students' math and science grades. But they'll consider subjective criteria as well, Murdoch says. "We're interested in students who are creative, innovative, risk takers—students who have done interesting things like start their own businesses or build rocket ships in the garage."

Of course, Olin's initial students will take their own risks simply by attending a new college rather than a better-known existing one. So in response Olin offers a strong incentive for its first few incoming classes: The school will waive all or most of its tuition charges. For more information, visit www.olin.edu.

—Anne Stuart

In Their Own Words

"This may be the only place outside Jurassic Park where you can watch dinosaurs mate."

—GARY HAMEL, CHAIRMAN OF STRATEGOS, REFERRING TO THE MERGER OF TRAVELERS AND CITICORP DURING A SPEECH AT THE 1999 CSC EXCHANGE CONFERENCE IN BOSTON.



e-business

bankone .com

Bankers hours:

24 hours a day

seven days a week.

365 days a year.

One convenient location:

www.bankone.com

**GTE Internetworking.
Enabling e-business.**



INTERNETWORKING
POWERED BY BBN

1-800-472-4565
www.internetworking.gte.com

e-EEK

You don't need a crystal ball to know that the business world is e-volving e-normously

BY CASSANDRA

THE OTHER E-VENING I WAS E-LABORATING TO my business partner Sid Seer about the future—our favorite subject. We had just returned from an e-conference and were not feeling e-lated. In fact, we felt deflated. Why hadn't we, proprietors of Age of Aquarius Astrology Inc., seen this coming?

The message of the e-conference was simple: If you are not already e-merging on the Web, you had better redouble your efforts and get some e-tools, e-advice and e-clat (as the French say). And really, handing out fliers in the subway to drum up business has been taking its toll. To get going, we decided to look in the Yellow Pages—what better place to find an e-consultant? But there was no heading that said e-advice. We stumbled on relocation, which sounded close. The first listing under that heading was 2 Fellas.

"Hello, we are wondering if you can help our business relocate," I said.

"You betcha," came the response.

"We need to get to the Web."

"Is that in this country?"

"It's everywhere. It's global. We need global presence."

"You want a cruise? We're not a travel agency. Maybe you should call a travel agent."

"No, I don't think you...." But it was too late. 2 Fellas had hung up on us.

So we found a business-to-business book and looked up Internet, and—alakazam!—we found Internet organizations and Internet service providers. Instead of calling the first name, we thought we'd try some e-verse psychology this time. We dialed up the World Wide Web Consortium, even though we were a little frightened by the cryptic code below the phone number: <http://hwww.w3.org/pub/WWW>.

No one was home at the W3C (I think I'm getting it), but we

left a message and waited for someone to call back. But what about the Internet service providers? Under that heading it said, "see also Electronic Mail, Freenets, Online Services, World Wide Web Search Engines." Maybe we needed an engine to get on the Web. How many cylinders, I wondered. This was starting to look expensive. If there were Freenets, maybe that's the way to go. (Here at Age of Aquarius Astrology the prophets e-clipse the profits.)

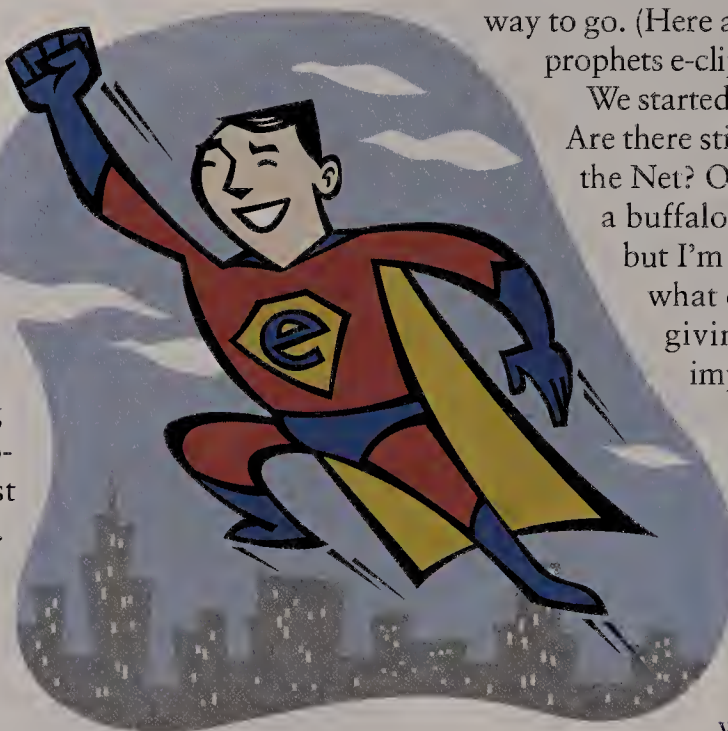
We started down the list: Buffalo Free-Net? Are there still buffalo? Do they roam free on the Net? Or maybe they are prohibited; it's a buffalo-free zone. There's HoosierNet, but I'm a lousy free-throw shooter. And what does any of this have to do with giving me a global presence and improving my personal e-economy?

Given the logic that surrounds e-commerce, we turned to our Ouija board, sort of an old-fashioned search engine. It picked a name from the middle of the list. Who says the Web will eliminate middlemen? Our call put us in touch with someone who shoots questions like bullets:

Do we have a webmaster? (Is that anything like a warlock?) How much traffic do we expect? Is this for promotion or transactions? What ROI (French again!) are we expecting? Servers? Are we being served? Do we want to advertise on a...did he say port-hole? For \$20,000? And people accuse us of mumbo-jumbo!

Is Sid really ready to be a Netizen? Our lack of e-xertion in this so far testifies to our reluctance to take giant leaps while wearing Birkenstocks. But isn't that what draws people to us in the first place? Maybe someday we'll join the new economy, have a URL and a galaxy of advisers. Someday. **CIO**

Former Senior Copy Editor Sheila Neylon e-licits advice from Cassandra and Sid on nonelectronic topics. Send topic suggestions for Reality Bytes to reality@cio.com.



MODE VISUAL

VELOCITY: BIONIC

RATE 100% EFFICIENCY

SOURCE: CORPORATE NETWORK



10
20
30
40
50
60
70
80
90
100



MISSION

TARGETED
INFORMATION
RETRIEVAL

100

510

540

570

600

630

660

690

720

750

The Right Knowledge is Power

Introducing Inxight Open Portal Products.

Software that lets you focus on the information you need.

Visit www.inxight.com
or call 1.877.INXIGHT
for more information on
our Open Portal Products.

inxight



Inxight. Making Information Make Sense.

Fedders' Sal Giordano Jr.

The president and CEO of global air conditioning giant Fedders Corp. in Liberty Corner, N.J., races sailboats and credits technology with keeping his company afloat

How much do you personally use technology?

I've been interested in the latest technology for a long time, because my hobby is racing Grand Prix sailboats, and Grand Prix racing is really an arms war. Whoever has the best technology has an edge. Not only that, but the sailing community is scattered all over the world, so I've been using e-mail to keep in touch with people for years. This makes using office technology pretty simple.

Do you think your company's non-IS executives recognize the importance of strategic technology?

I really think they do. For one thing, we use it a lot. For example, we're in the second generation of videoconferencing. We have it in all our U.S. locations, Singapore and the United Kingdom. Additionally, our manufacturing people are big fans of CAD, and our sales and service folks have been online for years.

We also involved the key senior executives from all the functions when we bought an ERP installation.

Do you recall any particular events that crystallized the importance of technology for you?

There are at least three, and perhaps four. The first was in 1991, when we bought a company called Emerson Quiet Kool. They had a marketing system that

really opened our eyes about what we could do. Then in 1995 we went to a solid 3-D modeling program, which cut down remarkably on product-design to manufacturing lead time.

In 1996 we strengthened our supplier relationship with Wal-Mart and tied into its Retail Link program. We'd been doing EDI with other retailers, but this system gave us information that let us become an accurate response manufacturer. It tells us daily what was sold in every store, what's out of stock and what distribution centers have [in inventory]. We can adjust our manufacturing immediately, if need be.

Perhaps the fourth event was this year, when we began recruiting people over the Internet. It's the brainchild of our vice president of recruitment and leadership development, and I've been quite impressed with the quality of the resumes we've been getting. I don't know for sure how this is going to pan out in the long run, but so far it looks good.

Where are you on the implementation curve of new technology?

I consider us generally about two steps behind the cutting edge. We don't want to be pioneers, which can be dangerous. On the other hand, I wouldn't mind being one step behind the cutting edge.

—Carol Hildebrand



PHOTO BY EDWARD SANTALONE



83% of companies **HAVE NOT TESTED**
their computer system disaster recovery readiness.*

[Make sure you'll pass your first real test.]

Computer system disasters cost companies millions. Indeed, it can lead to the company's destruction. What, you may ask, can assure your company's survival? Only an airtight, proven data backup plan. An essential ingredient of which is DLTtape™ technology, the industry standard in reliable tape backup systems. And DLTtape system vendors, working in conjunction with a number of disaster recovery experts, can provide you with the information, tools and expertise you need to survive a catastrophe. To learn how safe your company is, visit us at www.Provelt38.DLTtape.com or call us at 1-888-DLTtape.



*DLTtape Provelt Index for Disaster Readiness: Q1 99



ON THE NOSE

Dan Hamilton, group vice president of pricing, food service and logistics (right), and his IT trainer, Edward Kramer, senior technical analyst, hit H-E-B's target of honing executives' technology skills and building relationships between business and IT.

*How executives at a major grocery chain
learned that tech proficiency makes great business sense*

nerd makers

When executives start showing up at meetings in costume, most would agree, it can't be a good thing.

But when Shawn Sedate, director of information services and process management at H.E. Butt Grocery Co. (H-E-B), launched the quarterly officers' meeting on March 9, 1999, appearing in a brightly colored beanie with its propeller a-twirl, thick glasses held together with tape and a plastic pocket protector boldly adorning his nerd T-shirt, it heralded some very exciting changes for the San Antonio-based grocery chain.

It all started in October 1998 on a Continental Airlines flight from San Antonio to Houston. In a fit of boredom, Bob Loeffler, president of H-E-B's Pantry division, picked up the in-

flight magazine. Inside he found an article about how Chase Bank of Texas implemented a program to teach its executives the ABCs of technology. The Necessary Executive Reshaping Degree (NERD) program, as Chase dubbed it, paired executives with a "personal trainer" from the infor-

mation technology (IT) department, and the two met once a week to talk about how various applications and systems function and how each technology relates to the executive's particular role. According to Chase, the program has been successful in encouraging technology-averse executives to incorporate IT into their daily

Reader ROI

IN THIS STORY, READERS will learn

One way to build closer relationships between business and IT

How technology tutoring can revamp executives' workstyles

How an executive mentoring program can make IT staff more effective

BY DAINTRY DUFFY

activities. Loeffler was intrigued by the idea. H-E-B's CIO had recently left the company, and as a former IT manager, Loeffler had been tapped to act as interim CIO while a replacement was sought. From his tenure in both the IT and executive camps at H-E-B, Loeffler knew that the company could really benefit from such an initiative. Not only would it serve as a wake-up call for some of the company's less technically adroit executives, but it could be the jumping-off point for a stronger relationship between the executive and IT groups. Loeffler tucked the article (a reprint from Fast Company) in his briefcase and brought the idea for a NERD program to the company's executive committee. If any of the members suffered an attack of nerves at the notion of being tutored by a bunch of techies, they hid it well because, according to Loeffler, the executive group was eager to implement the program and gave it their immediate and unqualified blessing.

NERD Preparation

The H-E-B executives admired Chase's program, but it was geared toward objectives that were very specific to Chase's IT systems. Loeffler met with Sedate, and together they determined the goals for H-E-B's program and how best to achieve them. It would, of course, be unrealistic to try to turn every executive into a PC power user. Rather, the hope was that by focusing on some of the technologies fundamental to H-E-B's business, they could provide a technology education that would be useful, easily understandable and applicable to any area of responsibility. With this in mind Loeffler and Sedate settled on three basic precepts to guide H-E-B's NERD program:

- To educate, energize and engage the officers in technology.
- To build relationships between the officers and the IT group.
- To have fun.

Before the program could be announced to the executives, Sedate had to find volunteers within the IT group who would be



BLOOMING RELATIONSHIPS Programmer Analyst Kim Kelley will continue to act as a resource for her protégé Jim Smits, former vice president of produce and floral, as he transfers to Dallas to expand the market.

Profile: H.E. Butt Grocery Co.

Headquarters: San Antonio

1998 sales: \$7 billion

Employees: 45,000

Size: The largest private company in Texas

Location: 250 supermarkets in South and Central Texas, Mexico and Louisiana

Founded: 1905 by Florence Butt

willing to act as trainers. Naturally the opportunity to develop a personal relationship with a corporate officer was attractive to many employees in the group, and Sedate and Loeffler actually pooled more volunteers than slots available. Once they established a pool of participants from which to draw, Sedate and his staff proceeded to match IT staffers with executives. Because part of the goal was to build lasting relationships between business and IT professionals, they tried to form pairs with compatible personalities and skill levels. After all, not every executive was technology impaired. In a skills assessment survey, the IT group had discovered that several of the non-IT executives could actually write code and had done

Are you ready for the new customer?



They only want one thing.

They want your product information, sales staff, service plans, tech help, partners and prices all to fit on their computer screen.

E-customers are a demanding bunch. They don't want to hunt for information. They don't want to search for convenience. They want it here and now. And that's why they're taking a hard look at the companies they deal with. Can they get 24/7 access? Can they get up-to-date, consolidated information from a single source? Can they get it delivered in a personalized format? For many companies, those are tough questions—integrating their customer relationship management systems with their web site is asking a lot. This is where Vantive clicks in.

A leader in customer-facing applications since 1990, Vantive's high-performance architecture gives customers a 360 degree view of your company. In turn, it gives you a complete picture of the customer—with powerful agent solutions. By extending your enterprise to the web, Vantive helps you manage the customer lifecycle. So no matter how they interact with you (web, phone, fax or in-person), you can meet their needs—from buying to support. It's the kind of integration companies like yours have been wrestling with. And the kind of service e-customers demand.

Contact Vantive to receive a white paper on e-business.

www.vantive.com
1-800-VANTIVE

vantive
the e-customer company

things like purchase a car on the Internet. These executives would need a trainer who could keep up with their more advanced interests.

Geek Fun

 Mandating fun as a corporate goal for an executive education initiative may sound a little hokey, but with a program like this, it's serious business. One of the immediate concerns for Sedate and his staff was that executives with little technology experience might feel threatened by the initiative. Sedate's appearance in full geek regalia to announce the program at the officers' meeting was intended to send the clear message that the program would not be heavy-handed or attempt to single out anyone. Sedate knew that some of the executives might feel that as officers of the company they should already know more and could be worried about appearing ignorant in front of the IT group and their executive peers.

Organizers cultivated some friendly competition among the executives to encourage interest and participation—and to maintain the sense of fun. All executive participants had their pictures posted on the company intranet along with a time line to indicate how far each had progressed in his or her NERD training. This allowed the executives to appreciate their own progress as well as engage in some gentle ribbing of fellow nerds-in-training who may have fallen behind. During one

“We’re playing Mozart instead of ‘Chopsticks.’”

—DAN HAMILTON, GROUP VICE PRESIDENT
OF PRICING, FOOD SERVICE AND LOGISTICS

training session near the end of the 10-week program, Bryan Magnuson, vice president of bakery marketing, and his IT trainer Garrick Eastwood, a project leader, were reviewing the company's e-mail system when Jim Smits, former vice president of produce and floral (now part of a leadership team to move into the Dallas market), and a buddy of Magnuson's, popped his head in the door. “Hey, did you get him past that part where he

NERD Program Curriculum

Over the course of 10 weeks, H.E. Butt Grocery Co. (H-E-B) executives and their IT personal trainers covered a different technology subject each week. Some sessions focused on broad categories of technology; others dealt with systems specific to H-E-B's business. Think the subject matter sounds simplistic? How many of the top executives at your company have mastered the basics of these topics?

- Week 1: Your PC (network, hardware)**
- Week 2: Your PC (Microsoft Office software)**
- Week 3: Communications (phones, pagers)**
- Week 4: Intranet**
- Week 5: Internet**
- Week 6: Decision Support System**
- Week 7: How Billing Works**
- Week 8: Electronic Payment System**
- Week 9: ACR (H-E-B's point of sale system)**
- Week 10: Tao 4.0 (H-E-B's e-mail application)**

has to turn on his PC?” he asked with a laugh.

The fact that the entire executive staff was going through the training at the same time added camaraderie to the competition. Executives have been sharing the information learned in their sessions with one another. “There has been a lot of, ‘Hey did you know this?’ or ‘Did your trainer teach you this?’” says Smits of the conversations among the executives. For example, Smits showed Magnuson how to send confidential e-mail (a useful skill enabling him to handle issues like his assistant's salary increase via e-mail without her having access to the information), and Magnuson became the resident expert at using e-mail to automatically send himself reminders for the meetings on his daily agenda.

In keeping with the spirited approach to the program, the officers set aside time at their quarterly meeting in August to hold a NERD program graduation where Loeffler will hand out awards for different accomplishments and executives will receive a propeller-topped beanie of their very own. This is not quite the light-hearted formality that it sounds. As of the last week of the program, a few of its 40 executives had fallen behind and some of those individuals may not graduate with the rest of the executive class—undoubtedly inspiring some pithy comments regarding summer school.

Many Happy Returns

 The NERD program is not all beanies and banter, however. The participants—both executives and their IT trainers—insist that they have learned a great deal from the project. Smits points out that although he was an adept technology user before the program started, it has given him an opportunity to delve much deeper into some of the systems and to develop a better understanding of what they can do for the business. “It was like having a Porsche but driving it like a Volkswagen,” he says of the approach that H-E-B executives had formerly taken to technology. “You have all this great stuff, but you don't really know how to get everything out of it.” And Dan Hamilton, group vice president of pricing, food service and logistics, points out that the quality of even the most mundane of executive tasks has stepped up a notch. Although

A black and white photograph of an astronaut in a space suit, floating in the void of space. The astronaut is holding a small, rectangular electronic device with two circular lights. In the background, the curved horizon of the Earth is visible, with a bright sun or starburst effect on the right side.

**When a man 92 miles from Earth
is depending on your systems,
you don't take chances
on your power protection.**

Formerly Exide Electronics

When power reliability is absolutely essential, mission-critical operations like NASA turn to Powerware to keep their systems up and running.

Powerware is a world leader in power protection and management solutions. Our technologically advanced UPS models meet the challenges of 24/7 applications, including networks, server farms, ISPs and data centers. The difference is Powerware Enterprise Advantage - unique features that eliminate many single points of failure:

- DC Expert provides realtime information on battery health and runtime without degrading battery life.

- Communication is customized to notify you when action is needed.
- Powerware Hot Sync lets two or more modules work in tandem, without a bundle of wires between controls. The modules function independently, eliminating downtime.
- Intelligent Input Filter continuously evaluates load level and input power conditions, and configures itself for the most seamless operation.

These capabilities propel Powerware beyond the competition. To learn more, check out www.powerware.com/advantage. Or call us at 877-PWRWARE (877-797-9273).


POWERWARE[®]
POWERING THE WORLD

An Invensys company

most executives have been typing their own letters and doing their own mail, e-mail and spreadsheets for some time, the NERD program has drastically improved the look of their correspondence and spreadsheets. Documents that were once sloppy are now clean, crisp and adorned with headers and footers. "We're playing Mozart instead of 'Chopsticks,'" marvels Hamilton.

From his work with Kim Kelley, a programmer analyst, Smits says that he now has a clearer sense of how the IT group fits into the business and is confident that he will be able to make more informed requests for their services. "I expect to have better conversations with the IT folks about the time and the resources that it will take to get a job

done," says Smits. He adds that he has gained a better understanding of the systems' complexity as well as all the different avenues that information has to travel and

the many ways in which they can break down. Understanding those issues has netted him two qualities that executives often lack when dealing with IT: patience and empathy.

The NERD program's benefits were definitely

not one-sided. In most cases, the IT personal trainers learned as much as they taught, both on technical and business application issues. Kelley did not know Smits before she met with him for their first NERD training session. She found him to be a very receptive student, but before long it became apparent that they would both

"The technical stuff you can always learn; it's the relationship that got built that is more important."

—KIM KELLEY, PROGRAMMER ANALYST

SCHOOLING THE BOSS

CEO-as-student expands his technology repertoire and pushes the tutoring program

IF EDUCATING ONE OF H.E. BUTT Grocery Co.'s top executives about technology sounds like a tough assignment, imagine discovering that you've been charged with making a certified NERD out of Charles Butt, H-E-B's chairman and CEO. That was the prospect facing Steve Bassel, H-E-B's director of IT infrastructure, and he admits that it made him a little nervous—especially since the chairman was determined to be the first to complete the program, and finished the 10-week course in only four weeks. Adding to the pressure was the fact that the course materials for the latter segments of the program were in rough form and hadn't been tested. "I was doing a prototype of the lessons on the CEO," chuckles Bassel. "That was a little stressful."

Before his NERD training, Charles

Butt was known for sending handwritten notes when he wanted to communicate to fellow executives. "He was not hugely technology savvy," Bassel says but notes he was very quick to grasp the business applications of various technologies. "He asked good questions and was able to put business spins on [technology issues] right away," says Bassel. The chairman was particularly interested in anything to do with the Internet, and one of the first things they did together online was surf competitors' Web sites.

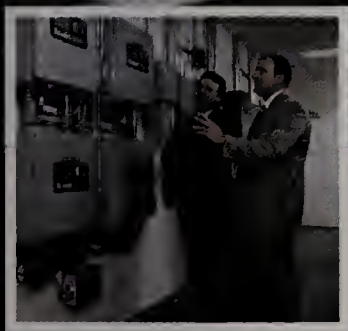
Butt's new technical skills are enabling him to gather information in new ways. He can monitor movement in sales and profitability on individual items in a timely way, view information on the cost of goods, and for retailing and marketing purposes he can determine whether there is any synergy between the sales of particular items. And now that Butt is using

e-mail, new lines of communication are forming. "He asks a question and can get a quick reply," says Dan Hamilton, group vice president of pricing, food service and logistics. "It has also opened the door for people to e-mail him back," he adds—something that his handwritten messages did not encourage.

The long-term effect of the NERD program on Charles Butt's leadership is likely to extend far beyond e-mail communication with colleagues. Bassel believes that the increased baseline understanding of technology is giving the chairman a new perspective on his family's 94-year-old business. "IT has become a part of his regular consideration process," he says. "It broadens what is possible in his own mind, whom he takes counsel from, his view of the world and how to do business in it."

—D. Duffy

HE MAY NOT HAVE A CRIME-FIGHTING SIDEKICK, TELEPATHIC POWERS, OR SUPER STRENGTH...



Liebert Representative Jeff Price of CDP, Inc.,
worked closely with Joel Komater of Fiserv,
one of the largest data processing firms serving the financial industry, to
configure a total protection system using Liebert's extensive product line.

...but when it comes to system
availability, his power will defend
you from the evils of downtime.

Today, system downtime means (1) the business grinds to
a halt, and (2) it's your fault. Modern businesses demand
maximum system availability. That's why you need Liebert
Representatives and UPS products.

Liebert Representatives are experts in system protection.
Their backgrounds, training and experience help them
quickly diagnose and solve your problems.

And Liebert UPSs deliver the same commercial-grade
reliability as the rest of our extensive product line. It's the
result of 30+ years of providing cutting-edge protection
to some of the largest corporations in the world.

When you buy from a Liebert Representative, you're
buying quality products from a knowledgeable expert.
He has the products *and* the experience to make your
systems invincible, 24/7.

See us at Networld + Interop Atlanta—
Booth #1438

www.dp3.liebert.com

To learn how Liebert can help you maximize system availability.



KEEPING BUSINESS IN BUSINESS.®

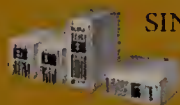
800-877-9222 dept. DP3

www.dp3.liebert.com

info@liebert.com



PRECISION
ENVIRONMENTAL
CONTROL



SINGLE-PHASE UPS



THREE-PHASE UPS



SITE MONITORING
AND CONTROL

HIGH TECH AND HIGH SPIRITS Project Leader Garrick Eastwood embodies the mandate for fun that H-E-B included in its goals for the NERD program.



play the role of teacher in different ways. She recalls one session where they got stuck on a technical matter and he actually figured it out and explained it to her. When they tackled the issue of billing, he basically taught the session because it was something with which he was very familiar and she was not. But most of all, Kelley gained strategic insights from Smits. By watching how



to continue. Smits will be transferring to Dallas, and Kelley has agreed to act as a resource as he sets up his home office. That's the true benefit of the NERD program in Kelley's eyes. "The technical stuff you can always learn," she asserts. "It's the relationship that got built that is more important." Edward Kramer, a senior technical analyst and

trainer for Dan Hamilton, agrees, pointing out that most IT staffers who participated in the program now have somebody on the executive level with whom they have an established trust and can go to for advice or to provide a broader perspective on an IT or business issue.

Round Two

H-E-B were to do the NERD program all over again—and it just might do so in order to tackle new topics and bring training to managers as well as executives—enlightenment gained from the program's first iteration would shape the next. For example, as Kelley points out, the curriculum wasn't customized for each executive. The executive she worked with was already well informed on some technology topics and consequently the sessions on those topics were not especially useful for him. When you are dealing with the schedule of a busy executive, she notes, you want to make sure that you're not wasting time.

For companies considering this kind of program, Sedate points out two basic hurdles. The first is confidentiality between training partners and the need to ensure that both the executive and trainer feel comfortable and free from judgment about what they know or don't know. The second is scheduling, and allowing the NERD partners the flexibility to create their own schedules and time frame for the training.

Though Sedate stresses that this is a worthy route to travel, he cautions companies not to expect dramatic or easily measurable results. "I think the benefits are more

"Questions, calls and discussions that didn't used to happen are now happening. There's a new flow of communication."

—SHAWN SEDATE, DIRECTOR OF INFORMATION SERVICES AND PROCESS MANAGEMENT

he approached each of the technology topics, she learned what executives need from their IT partners. The context and focus of his questions proved illuminating for Kelley. She says that she now has a better idea of what an executive team would be looking for were she to approach one with a project pitch. The personal relationship that Kelley and Smits have formed is likely

intangible," he says. "I'm seeing different types of conversations now. Questions, calls and discussions that didn't used to happen are now happening. There's a new flow of communication." **CIO**

Staff Writer Daintry Duffy can be reached via e-mail at dduffy@cio.com.

Wire 42 schools and you come back recharged.

"...Working in teams, adapting to change, knowing how to be continual, independent learners—these will be even more important in the future. US companies won't continue to succeed without those kinds of workers....In **TECH CORPS**,[®] I've seen diverse companies, including



competitors, come together to boost education through technology....We've wired 42 schools in Rhode Island. Now the Internet is being used there everyday. We made that happen. We made a difference....When companies get involved in **TECH CORPS**, their people come back recharged....**TECH CORPS** is good for your company's present and indispensable to its future."

—**Rodger B. Dowdell Jr.**
Chairman, President, CEO
American Power Conversion Corporation (APC)
TECH CORPS State Chairman

TECH CORPS...technology volunteers in K-12 schools.
Visit us at www.ustc.org, e-mail us at info@ustc.org, or write to
TECH CORPS, PO Box 832, Sudbury MA 01776.



Get involved!

Special Thanks to **TECH CORPS** National Sponsors:

Cellular Telecommunications Industry Assoc.* • Cisco Systems, Inc. • Computerworld* • Digital Equipment Corp.* • MCI* • MediaOne • National Cable Television Assoc.

WANTED: Business school professors who can teach electronic commerce.
Real-world knowledge preferred.

degrees of separation

It's a classic supply and demand problem: MBA students want to learn about cutting-edge business concepts, and electronic commerce is one of the hottest concepts of all. However, finding people able to teach the subject, which demands a combination of business and technology expertise, is difficult at best (see "Needs Improvement," *CIO* Section 2, March 15, 1999).

So it's no surprise that Donald P. Jacobs, dean of Northwestern University's Kellogg Graduate School of Management in Evanston, Ill., had a job for an endowed chair in electronic commerce go unfilled for more than two years. In order to finally fill it, he had to go way outside the bounds of the normal academic hiring process. Jacobs elevated Mohanbir Sawhney, an assistant professor in marketing at Kellogg, to be the Tribune Professor of Electronic Commerce and Technology,

BY CAROL HILDEBRAND

Reader ROI

READ THIS STORY
to learn

- About the disconnect between academia and the business world
- Why it's hard to find e-business faculty

a decision as startling as awarding a cardinal's biretta to a newly ordained priest.

Sawhney says that this is just the start of changes that Kellogg will have to make to stay ahead of the competition in this Internet-driven economy. *CIO* Senior Editor Carol Hildebrand recently sat down with Sawhney and discussed the 'ologies and 'isms of e-commerce and the MBA curriculum.



Mohanbir Sawhney, an e-commerce professor at Northwestern's Kellogg Graduate School of Management, doesn't mince words when discussing the state of e-commerce in MBA programs: "There's a huge vacuum in business schools when it comes to faculty who get it."

What was behind Kellogg's unusual decision to promote you from assistant professor to endowed chair?

The same thing that's making businesses scramble to reinvent themselves. The world is in an era of discontinuous change, and corporations are discovering that the existing ways of doing business aren't working. Management techniques are very ill-equipped for the new age of speed and networking. When Kellogg looked at how business is taught in business schools, it realized that schools also have a

legacy problem. We're in the main-frame era when it comes to how the school is organized. We realized this just as we started asking who is going to teach the future managers of this new economy.

Sounds like you figured out that the current system won't give you the brain-power you need.

It's a rather cruel paradox, but the world is changing so fast that our intellectual frameworks are out-dated. Younger people who aren't hampered by preexisting ideas about what will and will not work are completely changing the way business is conducted. The result is that experience is no longer an asset.

It used to be that if you went into a business school and asked for the best professor in a particular subject, you'd probably be directed to the most experienced and well-known person on campus. Today, experience doesn't necessarily help them.

So where do business schools find people who do get it?

That's the problem. There's a huge vacuum in business schools when it comes to faculty who get it. Every school is making noise about creating an e-business major, but they can't find people to teach the relevant classes. I can think of about 20 people who I'd consider thought leaders in this area. And the scary thing is,

the changes wrought by the new economy affect every field of business knowledge, whether it's the organizational behavior guys who need to understand the molecular organization or the people in finance who need to teach real-options thinking.

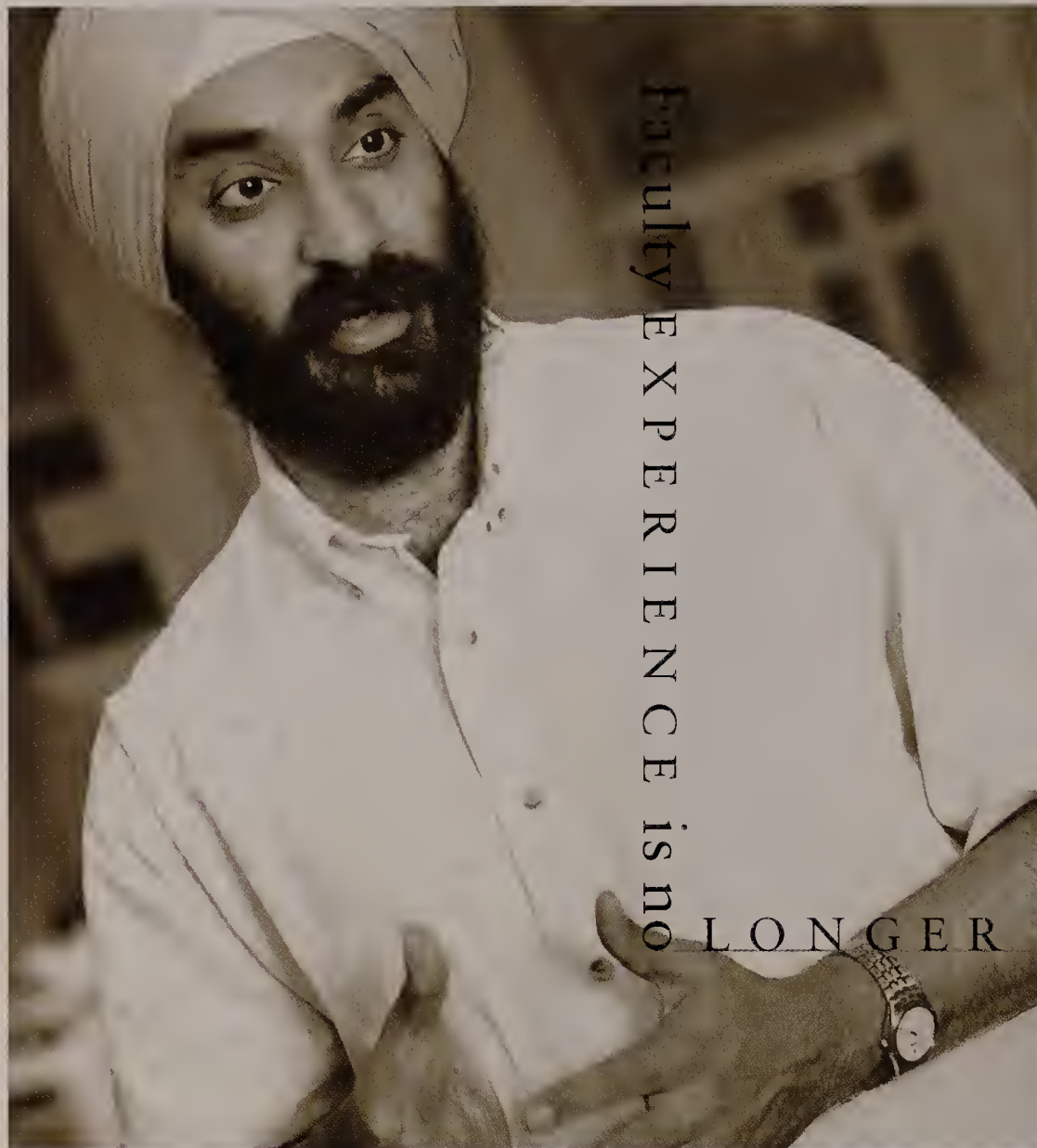
And that shortage of candidates led to your current perch as Kellogg's e-commerce professor?

Yes. When The Tribune Foundation endowed the chair a couple of years ago, I was on the search

HIGHER EDUCATION

committee. But we couldn't find anybody for the chair who had the requisite level of academic seniority. The

since the start of my career, and there's been an explosion of demand for that kind of expertise.



academic vesting process takes years: You start as an assistant professor. If you make tenure, which takes four or five years, you become an associate professor. Three or four years later, you can apply and be granted a full professorship, and four or five years after that you might receive an endowed chair. When the dean appointed me to this chair, he effectively vaulted me up four levels. It was an unprecedented move in terms of sidestepping the traditional academic review process.

And all because you know the Internet?

Well, it's all relative. You know the saying, "In the kingdom of blind men, the one-eyed man is king"? I'm that guy. I've really embraced the Internet

So why can't professors just learn this stuff?

Well, it's hard. You can't just dabble your toes in e-commerce; you have to dive in and be prepared to drown. And staying ahead of the e-commerce curve requires a different learning method. I talk with venture capitalists, entrepreneurs and analysts constantly. You won't get it if you just research it; you have to drink from what amounts to a fire hydrant of information. This stuff is not found in marketing textbooks, and taking the typical academic research approach is a waste of time. Instead of sitting in ivory towers, you have to get into the business world.

I see the problem as a huge disconnect between the traditional metrics of academic review and the real world of

business. For example, I'm heavily involved in curriculum development. I also advise startup companies and write articles for the business press. These things all add huge value to Kellogg. The students and administration realize this, but in terms of the tenure review process, it doesn't look good. That process requires publication in peer review publications, such as *Marketing Science* and *Management Science*. I do publish in those books too, but the average article there takes three years to get published. Compare that with three months for *Business 2.0* or a year for *Harvard Business Review*. See what I mean? It's a mainframe metric. And ironically, I get way more feedback from an article in *Business 2.0* than I do from any peer review article.

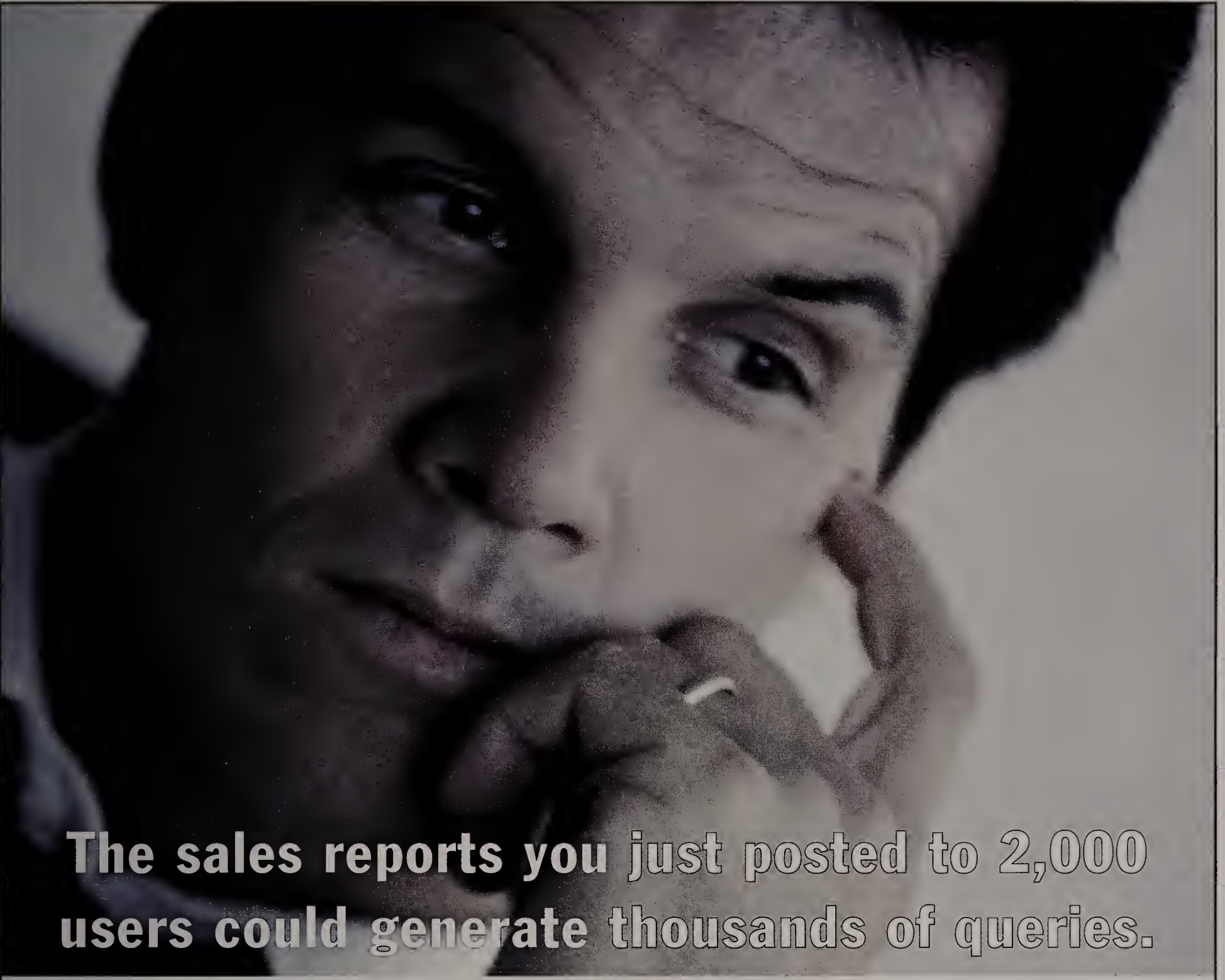
The bottom line is that I'm interested in big picture thinking. Unfortunately, academia doesn't reward that; they reward rigor and precision. So what happens? Academics end up solving irrelevant problems for irrelevant people.

Sounds like venture capitalists and entrepreneurs could teach the courses....

Well, not quite. You need the kind of person who combines a certain amount of analytical rigor with the ability to generalize beyond context. Academia is very good at linking analytical models to underlying theories, and we need that skill as well as functional business experience.

There are some authors, such as Don Tapscott or Patricia Seybold, who combine these qualities. The best candidate would be Bill Gurley at Benchmark Capital. He's the kind of person we need, but he made millions last year, so why would he want to come here?

I think that we'll eventually develop a form of free agency that will help answer the problem. What free agency says is, 'We can't afford you full time, so we're going to buy slices. You com-



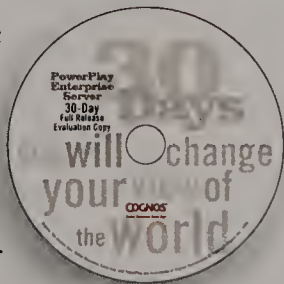
The sales reports you just posted to 2,000 users could generate thousands of queries.

No problem.

Your users can get their own answers in seconds with Cognos.

The Cognos Enterprise Business Intelligence solution gives you the infrastructure for delivering status and business performance reports to every user across the enterprise. But then Cognos goes much further. In seconds, users can find the information they need to understand a trend or exception, identify the cause of a problem, or maximize an opportunity. Whether it's transaction-level detail or

investigating patterns and trends in summarized information, Cognos delivers everything users need to understand the business—plus everything you need for fast deployment, central administration, and rapid return on investment. For a free 30-day trial of the industry's leading solution in business performance reporting, visit our Web site at www.cognos.com/entolap or call 1-800-426-4667, ext. 2099.



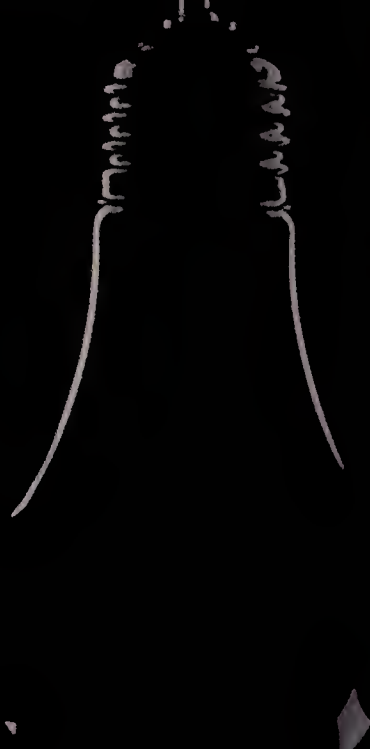
COGNOS®

Better Decisions Every Day™

Cognos, the Cognos logo, and Better Decisions Every Day are trademarks of Cognos Inc.

www.cognos.com/entolap

Windows 2000 is about to hit.



Is your network ready?

Introducing Windows 2000 services from INS.

It's all over the news. Windows 2000 will make your network more efficient, give your administrators more control and lower your operating costs.

But first, you have to determine if your network is ready. And if so, how will you design and deploy your network to take full advantage of Windows 2000?

Those are questions INS has answered for a wide variety of major clients since we became a Microsoft enterprise partner. Even Microsoft's Information Technology Group has asked us to help them deploy Windows 2000 throughout their global network.

**Microsoft taps INS
for Windows 2000**

We provide comprehensive assessment and monitoring services to prepare your network today and make your transition as simple and seamless as possible.

We also offer a full range of network services to help you reap the maximum benefits from Windows 2000 Server. These include Windows Internetworking and Directory Services, Integrated Communications Infrastructure, Network Management and Security, and Unified Messaging.

It's one more reason why most of the Fortune 100 trust INS with their networks, and why 9 out of 10 clients come back to us with additional work. In fact, INS was just named the #1 high tech consultancy by Yankee Group and Upside Magazine, who selected us over 140 other companies.

Download the Windows 2000 Readiness white paper.

To download the Windows 2000 Readiness white paper and our Windows 2000 Services brochure, visit our website at www.ins.com/microsoft or call 888-467-7753. We'll show you how bright your network's future can be.



The knowledge behind the network™

HIGHER EDUCATION

mit to teaching X amount of courses a year, and do whatever the heck you want for the rest of the time.' If schools want a free agent full time, they'll have to figure out how to pay them a million bucks a year. Schools will have to first find people who can span boundaries by being rigorous and relevant. Then, when schools locate them, they will have to come up with a new covenant between employer and employee. Opportunity costs for these people become very high. The nature of the contract has to change a little.

Now that you've been promoted, what are you going to do?

My charter is to work on several areas. The first is curriculum development, and Kellogg will offer an e-business major in the fall. (Incidentally, I bet that

doing. We're working on a couple more courses, one on complexity theory, and I'd like to see us have courses on knowledge management and technology-enabled relationship management.

What e-business trends currently intrigue you?

Most of the noise you hear in e-commerce is on the consumer side, but I see the most explosive growth in business-to-business e-commerce. I'm particularly interested in what are called e-hubs, which are a new kind of Web-based intermediary that have emerged to service the business-to-business market. (So much for disintermediation, huh?) E-hubs can focus on vertical industries like plastics or steel, or specific business processes such as project management.

CRM, or customer relationship management, is also something else I'm interested in. Essentially, it's a fancy name for customer care, but e-commerce is really driving integration in this area. Customer care used to be the province of the call center people, but along came the Internet, which really turned out to be a bite in the butt for them. Now you've got customers coming in through Web sites, e-mail and live chat rooms, and somehow, companies need to tie together all these disparate elements. If a customer e-mailed you something yesterday and calls to confirm today, and the call center person has no access whatsoever to the e-mailed information, the customer is going to get disgusted. **CIO**

Senior Editor Carol Hildebrand can be reached at cjh@cio.com.

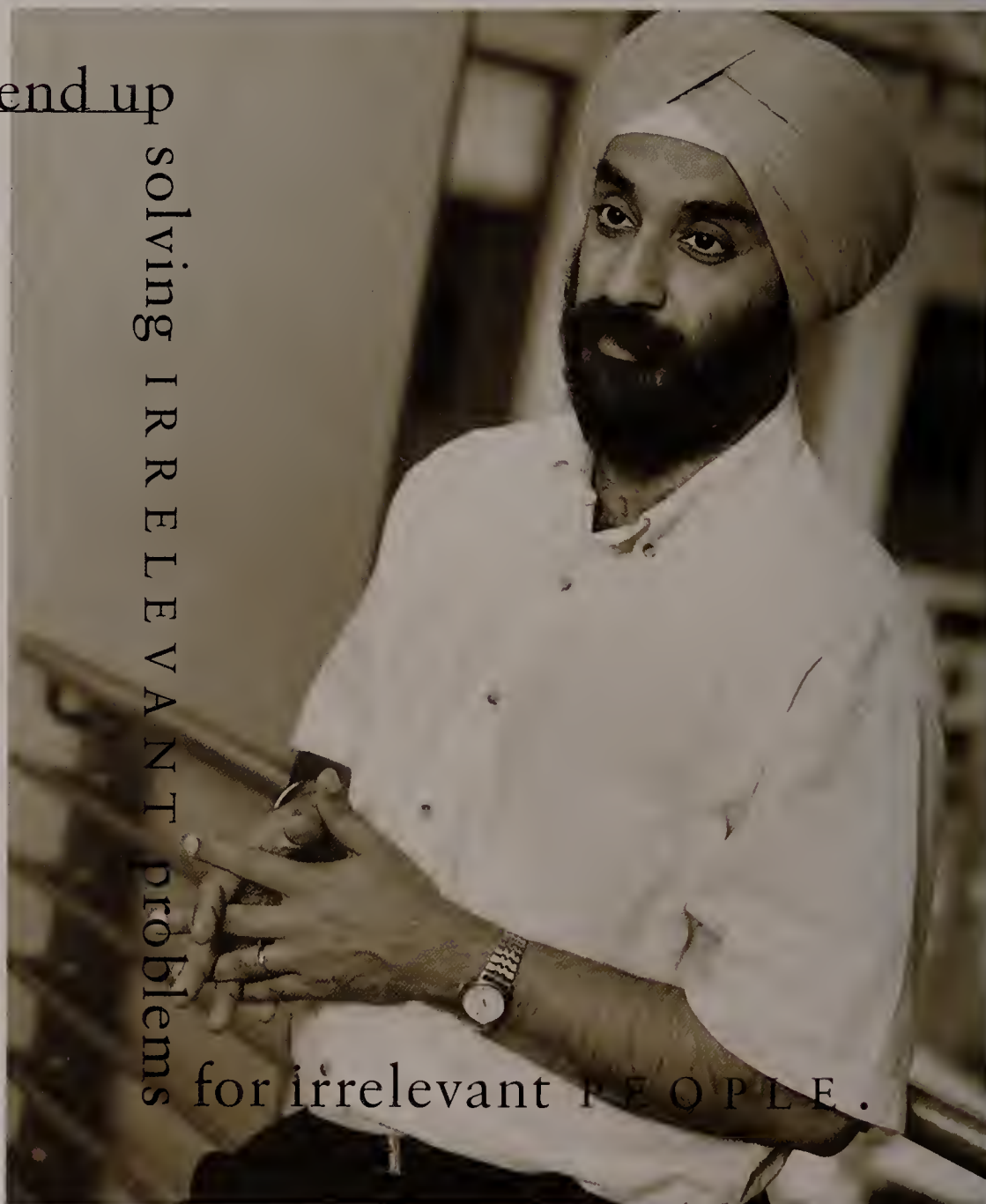
← ACADEMICS end up

the world will look back on this and think it very foolish to talk about e-commerce—it will just be commerce. But it is important as a transition point.)

Anyway, I'll head up a combination e-commerce and technology group. We won't hire into this group specifically; instead, we'll cross-affiliate ourselves with all the other functional departments and help find people to staff those departments. If they want to offer a course as part of the e-business major, our team, which is composed of both students and academics, will first review and evaluate the course. Before, Kellogg was offering disparate courses with no overall framework—I'm here to provide a framework. E-business is very integrated across functions because it is essentially a boundary-spanning discipline.

Have you got all your courses worked out for the e-business major?

In terms of offerings, we're pretty happy with what we've got relative to other schools. Of course, we're not happy in relation to what we could be



solving I R R E L E V A N T problems

for irrelevant PEOPLE.

NEW MOVES: MOBILE COMPUTING

Customers. End-users. Today, everybody wants a piece of your database. But how do you move parts of a huge, complex database smoothly? Quickly? Accurately? Princeton Softech data management tools get it right every time.

I'VE GOT TO SYNCHRONIZE 1,000 REMOTE SALESPeOPLE
WITH OUR CORPORATE DATABASE. **HOW DO I DO THAT?**

Princeton Softech's **Move for Servers™** surgically extracts referentially intact data and seamlessly moves it from one database platform to another. **SyncPoint™** tightly synchronizes mobile and corporate databases, maintaining high performance by updating only the precise parts that have changed. They'll help you quickly build the new Web, mobile and eBusiness applications you need. And deploy and test with 100% accuracy. Every time.

What are you waiting for?
Get moving.

eBusiness
Data migration
Web publishing
Mobile computing
Application testing

Princeton
SOFTECH

A Computer Horizons Company

We get it right. Every time.™

Need to move fast? Visit our Data Movement Resource Center today
at princetonsoftech.com/moves. Or call us at 800.457.7060.



U PIGGY BANK

A week-long crash course may be the only thing standing between you and a firm grasp of the finer points of finance

BY PERRY GLASSER

"IF WE DO THIS WRONG, IT'S THE SLAMMER," the COO of Wiggleroom Inc. says. We grimly nod, acknowledging the danger. Wiggleroom's executive board—that's us—is charged with elevating the sad 66-cents-per-share earnings reported by accounting to at

least the glorious 77 cents Wall Street analysts are expecting. Never mind that the Street's expectations were inflated by our own press releases. That was yesterday's problem. Today's problem is that by week's end we have to come clean and publish our Q1 earnings. So the question before the board is simple: How aggressive an accounting stance should we risk?

Fortunately for this group of soon-to-be

Reader ROI

READ THIS FIRSTHAND ACCOUNT OF an executive education class to learn

- How expanding your understanding of finance and accounting will help you contribute to boardroom discussions
- How the gray art of accounting can transform hard figures to mush
- Why an annual report represents one of many versions of the truth

felons, it's all playacting, a case study breakout session on our second afternoon at the University of Pennsylvania's Aresty Institute of Executive Education at The Wharton School of Business. As organizational models flatten, more executives of all stripes face such questions in real life. And when the boardroom agenda soars beyond mundane budgets into the thinner stratosphere of high finance, the CFO had better not be the only board member able to advance the discussion. To hone their knowledge of numbers, many executives are packing old book bags and immersing themselves into formal educational settings such as this one, Wharton's week-long crash course, Finance and Accounting for the Nonfinancial Manager. Collaring Throckmorton, the whiz-kid intern in accounting, for a quick and dirty explanation of discounted cash flow just won't cut it anymore.

But right now I'd pay the airfare to have good ol' Throckmorton beside me. Wiggleroom's VP of marketing notes that if we leave the Q1 report alone, after the expected stock plunge our executive bonuses won't buy a token for the Moscow subway. Across the mahogany table, Wiggleroom's CIO links paper clips, stares at his fingers and mumbles a possible plan. Just that morning we learned that FIFO and

at an executive table, from the vice president of operations to the CIO, needs to understand what's behind the bottom line.

FINANCE BOOT CAMP

The class's odyssey onto the treacherous seas of finance really was launched two days earlier. Having already explored executive education (see "School Choice," CIO Section 2, March 15, 1999), this reporter deemed it time to take the plunge personally. So one balmy Sunday in May, I drive from Boston to Philadelphia's Steinberg Conference Center at Wharton, a place more hotel than dormitory. No room service or plush bathrobes, but how many hotels are equipped with a networked computer in each room?

This will be a snap, I tell myself. Hang out, carouse, collect a certificate and head home with a new T-shirt.

Offered five times annually at Wharton, the finance and accounting course attracts a demographically typical group of students in May. The 50 executives and one journalist enrolled for a week come from Brazil, India, Saudi Arabia, Mexico, the United Kingdom and even far-off exotic New Jersey. We've got execs whose companies build jets, fly jets, lend money, design ballistic missiles,

finishing breakfast by 8, grabbing box lunches at noon for a working breakout session before returning to class, pushing on to dinner and then attending the optional post-dinner tutorial. He cautions us that scheduled breaks of 15 minutes in fact will be five, and he strongly urges us to attend the tutorials, which will review each day's content. "The program's goal is that on the last day you will realize just how much you still don't know, so you'll wish we could stay a day more," he adds jovially.

We laugh at Knutson's remark and chat politely, but an undercurrent of anxiety sweeps through the room. Good Lord, what was I thinking not to have so much as glanced at the textbooks we were mailed weeks ago? On the elevator back to my room, I recognize the icy panic emanating from the region near my liver. *I'm already behind on my homework.*

BASIC TRAINING

On Monday morning, we drift into seats in a sharply angled amphitheater and take possession of loose-leaf binders crammed four fingers thick with definitions, theory and fast fill-in exercises. Am I the only rube to smuggle a few extra souvenir Wharton pencils? There's no chance to check, because by 8:40 a.m. we are madly scrib-

"This is X-RATED ACCOUNTING! We don't teach this to undergrads. We don't teach this to MBAs. We know you people work in the REAL world."

—ROBERT VERRECCHIA, WHARTON PROFESSOR

LIFO are not the names of paired Labrador retrievers, but stand for first-in, first-out or last-in, first-out inventory treatments. Can we squeeze a few pennies out of our cost of sales by changing our accounting treatment of inventory turnovers? There'd be a footnote in the quarterly report, but he wryly observes, "Who reads footnotes?"

We glumly ponder Wiggleroom's options, and while we don't quite know what we are doing, it is startlingly obvious to us all that in an increasingly competitive business climate where change happens at warp speed, everyone seated

sell very expensive advice, weave panty hose, concoct chemicals and manufacture earth movers. We are presidents and directors and vice presidents and CIOs—possibly every executive rank and function except CFO gathers on Sunday evening for dinner and introductions.

Over tiramisu, Peter Knutson, the academic director, orients us. In class we'll be lectured to, but our hands will be very much on as we work through case studies and prepare reports. Knutson apologizes in advance for Tuesday's schedule, a busy day that will have us

bling notes. Knutson and Carl Polsky, practice professor of accounting, conduct successive 90-minute sessions that introduce us to financial statements, consolidated balance sheets and income tax fundamentals.

Until this day, I have always appreciated annual reports as aesthetic objects, publications with pretty photos, wonderful glossy paper and a few important numbers buried within. But Knutson has us dissecting the back pages of Dupont and Co.'s 1998 annual report. As promised, at Wharton theory is related to real-world practice. I'll never

SUCCESSFUL IT PROJECTS.

REPEATABLE PROJECT SUCCESS.

HAPPY PROJECT TEAMS.

MUST BE PRIMAVERA TEAMPLAY.™

Introducing Primavera TeamPlay™ — the only IT project management solution that successfully unites best-practice methodologies and effective project management. Now you can evaluate the impact of all the projects you take on and make certain they reinforce corporate business goals. Complete projects as promised using established methodologies and draw upon lessons learned to improve performance on future commitments.

With TeamPlay, project teams can collaborate like never before. Developers know what to do and how to do it. Project managers proactively handle project issues and risks. Sponsors see measurable progress on their projects. Team members can connect directly to project details over the Web and post feedback on their assignments. Making project success more repeatable and enjoyable for everyone involved. Which is exactly what everyone wants. And it's available right now. Find out today what new Primavera TeamPlay can do for your projects, and your people. Call 1-800-423-0245 or visit www.primavera.com/teamplay

PRIMAVERA
TEAMPLAY™
IT PROJECT MANAGEMENT



P O W E R T O T H E P E O P L E



The On Oracle logo is a trademark of Oracle Corporation.



PRIMAVERA
How the world manages projects



enjoy an annual report in quite the same way again.

Today's basic lesson: The mother of all financial reports is the balance sheet, a snapshot of a company at a specific moment, a document that by definition looks backward and reveals nothing about the future. If Polsky had one concept to teach, he claims it would be his injunction to "Read the footnotes!" Chicanery, deceit, changes in practice and aggressive accounting are, like God, to be found in the details. Definitions whirl past like the Tasmanian Devil on amphetamines: deferred taxes, depreciation, tangible assets, intangible assets, revenue.... We're like sponges abandoned in the pouring rain; after a while whatever comes down is just more

runoff. My mind wanders a bit, and when I look down I see that I have inked on my forearm the mantra of transactional analysis: $\text{Assets} = \text{Liabilities} + \text{Equity}$.

After dinner, I assume everyone is finding a place to carouse. But I see no one in the bar upstairs. I return to the classroom and find they're all here at a tutorial session run by Zehavit Joseph, executive vice president of IDB Holding Corp. in Tel Aviv, Israel. (For more on the tutorial, see "Junking a Milken Photo," Page 52.) By the session's end—9:30 or so—Joseph and the class agree that subsequent tutorial sessions can begin 30 minutes earlier. Why waste half an hour to anything so silly as rest, never mind carousing?

MARATHON TUESDAY

Yesterday's 12-hour schedule was nothing but a warm-up compared with today's. We're going to peer beyond the numbers to find out where they originate. Once breakfast is dispensed with, Robert Verrecchia, Ernst & Young professor of accounting, addresses us on assessing earnings quality. We haven't had the chance for coffee to take hold when it becomes plain Verrecchia pulls no punches. He tells us, "This is X-rated accounting! We don't teach this to undergrads. We don't teach this to MBAs. We teach *them* the right way to do things, but we know you people work in the real world."

No genteel dining room for lunch this day. We grab sandwiches and bottles of

CIO



Enterprise Value Retreat & Awards Ceremony

The information technology environment is dramatically changing its structure. The Internet, intranet, extranets and e-commerce have created new ways for enterprises and individuals to communicate with each other, leading to radically different channels of distribution and asset allocation.

The CIO Enterprise Value Retreat 2000 will explore how companies have added value by leveraging the enormous

opportunities created by these new technological enhancements. Led by Harvard Business School Professor F. Warren McFarlan, senior

"The Enterprise Value Retreat is a must for any CIO who is serious about his or her job and company."

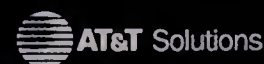
IT practitioners, business executives and technology company executives will participate in interactive lectures and case study discussions.

For more information, please call 800 355-0246 or visit our Web site at www.cio.com/conferences.

PARTNERS

ABT
Acxiom
AT&T Solutions
Comdisco
Compaq
Computer Associates
Data General
E.piphany
GTE Communications
Hummingbird Communications
Inacom
Nortel Networks
Novell
PricewaterhouseCoopers
Tivoli

The Enterprise Value Retreat and Awards Ceremony Is Proudly Underwritten by AT&T Solutions



January 30 - February 2, 2000 • Westin La Paloma • Tuscon, AZ • 800 355-0246 • www.cio.com/conferences

HIGH FINANCE FOR CIOs

What's a nice CIO doing at a place like Wharton? Plenty.

OLD-STYLE CIOs HAD LESS USE FOR FINANCE THAN KANGAROOS have for jet skis. But information executives with a firm grasp of finance create competitive advantages for their companies, as well as give themselves a boost up the career ladder.

MIKE MEYER is a case in point. As the senior vice president and CIO of a debt-collection agency and receivables management organization that is the surviving entity after seven company consolidations, Meyer has spent a lot of time standardiz-



ing messaging systems, networks and databases. But his boss at St. Louis-based Outsourcing Solutions Inc. (OSI) wanted him to understand the larger financial implications of being in an industry that's in constant rollup mode. Meyer chose to attend Wharton's

Accounting and Finance for the Nonfinancial Manager course in January 1999. Since he took the finance class at Wharton, Meyer's role at OSI has evolved into something more than the person who makes all the systems work together.

Now when it comes to any merger, "I'm in on the due diligence stage," says Meyer. "I used to look only at the IT shop—now I look at financials." Meyer's opinions about those projections, predictions of cash flows and calculations of possible efficiencies matter too. Since he's returned from Wharton, OSI has looked hard at acquiring three companies. After examining the books and judging how well the systems might mesh, Meyer and the rest of the executive board decided to pass on one and try to take over two. But no luck on those. When it came to the bidding, "We got beat," he sighs.



ROBERT W. KEDDIE JR. spent more than a year wrestling with a shift from a mainframe to client/server setup, getting systems Y2K compliant and putting Beneficial Savings Bank in Philadelphia online. But none of that



kept the executive vice president and CIO from finding a week in his hectic schedule to enroll in Wharton's executive education course. For 20 years Keddie has worked his way up through the IS ranks at the bank, yet he says his responsibilities now include much more than what he calls CIO stuff. He's involved in marketing, personnel decisions and serves on the bank's senior loan committee. For a major regional bank like Beneficial, that means Keddie has considerable say-so about the loans that affect the development of his community. Keddie advises other CIOs to plan a career path that includes numbers. Sounding more like a banker than a technician, Keddie says that when it comes to career advancement, "Accounting is the whole thing."

And regardless of whether career advancement tops a CIO's list of reasons for attending a finance and accounting course, becoming conversant in finance is sure to help IT executives in their current jobs. **DAVID S. HILL**, vice president for supply chain at NIBCO, a global manufacturer of plumbing supplies based in Elkhart, Ind., is one such pragmatist. After the week-long session in May 1999, Hill says he looks forward to "being able to talk the CFO's language when it's time to talk about how to control costs." The language of finance is the language of business; every CIO needs to become fluent.

—P. Glasser

sparkling water and are ushered into breakout sessions where we struggle to straighten out the not-so-minor problems of a company called Wiggleroom. We fiddle with capital leases, operating leases, interest expenses and cash flow. Can we massage Wiggleroom's per share earnings up to the magic plateau, that desideratum of 77 cents per share?

My group skates the thin line between fraud and fiduciary joy, and we settle on a reassessment of Wiggleroom's earnings to 76 cents per share. We're just too

decent to lie to our stockholders and Wall Street for that other penny. When we return to the lecture hall, every group has concocted a different figure, and every group wants to know what the right answer should be. Verrecchia shrugs and tells us we are all correct; balance sheet numbers originate with human judgment. There are no "right" answers, only fallible human beings trying to depict a company's financial position in a way that does not grossly violate what are called generally accepted

accounting principles. Within GAAP, the numbers are as solid as custard. Accounting is no black and white science; it's a gray, gray art.

One of the students questions whether a board would ever actually engage in a task that for many of us felt as though we were learning to lie in a special way. Verrecchia avers that this is indeed the business of many an exec board. But then he responds to the moral component of the student's question by asking another question designed to bring us



What's holding your IT systems together?

Having trouble finding IT skills these days? Operating in an unstable or costly IT environment, and managing a staff that's not properly trained? Chances are, your company's IT systems are something less than efficient. reSOURCE PARTNER simplifies your total IT outsource solution by providing comprehensive data center hosting, application management, EDI and network services... all with a single point of contact. At reSOURCE PARTNER, we deliver seamless, end-to-end outsource solutions that work. It's that simple.



888.737.7271 www.resourcepartner.com

The sleepy management of the supermarket chain just might someday hear the FLUTTER of leather wingtips and feel on their cheeks the HOT BREATH of a takeover specialist.

back to the level of the practical and real: "Did your group make its target?"

"No," the student replies.

"Well, the good news is you are not going to prison; the bad news is you have no job."

Oh, the joys of being an executive.

FINANCE SHENANIGANS

By Wednesday, the strain is starting to show on the faces of some of the execs who at each coffee and stretching break dash to telephones to contact their offices. Many of us have not been outdoors for two days.

Today we'll prepare to understand corporate valuation and financial statement analysis, the basic concepts for evaluating any potential merger or acquisition. (See "Secrets of the Merger Monsters," CIO Section 2, April 15, 1999). The class will move from the retrospective world of accounting, which takes a snapshot of a company's fiscal past, to the predictive world of finance, which forecasts a company's fiscal future. In the glamorous arena of high finance, executives in \$1,200 Armani suits barter companies like kids trade baseball cards. "I'll give you a 1996 José Canseco and a 1998 Mark McGwire for a 36 percent equity share of your Internet startup and enough convertible debt that anytime after Jan. 1, 2008, I can turn my equity into a controlling interest of the whole works. Deal?"

Our case study reflects the kind of work accounting departments do daily, and it requires a mix of accounting and finance techniques. A corporation considers buying a machine for \$500,000 to replace one it bought some years ago. All we have to do is decide whether the transaction makes financial sense. The trick will be to chart cash flow statements for a decade for each of the two scenarios—buying the new machine or not.

But some complications cloud the picture: An investment tax credit available

Junking a Milken Photo

Evening tutorials at The Wharton School's Finance and Accounting for the Non-financial Manager executive education course are run by Zehavit Joseph, executive vice president at IDB Holding Corp., an Israeli holding company. Joseph did her graduate work at the University of Pennsylvania business school and now returns to Wharton six times a year to help teach the course.

One night, while comparing pooled interests with outright purchase as merger strategies, Joseph waxes a bit nostalgic for her student days. At that time, Michael Milken, a Wharton grad, was tearing up Wall Street with his junk-bond fueled leveraged buyout strategy. "Milken was our hero," Joseph says, noting that Milken personally earned \$700 million in one of those high-flying years. At the time, the junk bond king's photo hung alongside other famous Wharton grads in a main corridor of the school. But when he was indicted for dealing in insider information, the photo was quietly and without ceremony removed, despite student protests.

Milken's legacy to Wharton is, however, significant. Soon after the student protests abated, the faculty began requiring MBA students to take two courses in ethics.

—Perry Glasser

to us for part of the 10 years we expect to own this critter will expire on a certain date. And the tax credit we already took on our initial machine's purchase was calculated on an accelerated schedule, so Uncle Sam expects us to give some of that back because we're selling the thing before its predicted life is over. Consider too that the "new" machine is not fresh from a factory; it's used, so there are questions about the depreciation taken by the company that now owns it. Of course, that situation creates tax consequences. Just to make things a challenge, the tax rates are scheduled to change during the time we will own the new machine, and the installation fee has to be accounted for. Naturally, we ought to calculate the impact on the balance sheet if we choose to recognize the cost of training employees as a one-time expense we can depreciate over time, or an ongoing cost we can charge on a regular basis....

Throckmorton!!

Back in the lecture hall we learn that, unlike yesterday's simpleton case study, this has one, and only one, right answer. My group doesn't hit it, but we have to admit it's not a shabby thing that all these nonfinance executives can, with some understanding, at least discuss the relevant issues.

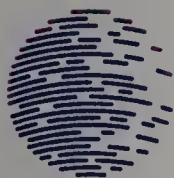
REAL-WORLD MONOPOLY

Thursday morning, Knutson cunningly informs us that no group in the history of Wharton's executive education program has ever gotten today's case study completely correct. Talk about motivating weary executives! The spirit of competition in business today is alive and well. Knutson's challenge is like throwing raw meat to starving lions.

If you want to play in the mergers and acquisitions game, you'll need to be able to understand finance ratios and how they differ by industry. And if you're



Avoid jams. Use our Internet highways.



CABLE & WIRELESS

Cable & Wireless is investing billions in increasing the bandwidth on our Internet backbone.

This allows us to offer you the ability to send your multi-media and Internet traffic, night and day, with no delays at all, even during peak-time rush hours.

And backbone is how Cable & Wireless is making the Internet a faster, more reliable place to do business. Backbone. You either have it or you don't.

www.cwusa.com
or email us at info@cwusa.com

Visit us at NetWorld+Interop Booth 1424



going to be good at the game, you'll want to get so proficient that a mere glance at such figures will reveal the difference between a bank and a bowling ball factory. We're prepped all morning on where to train our gazes. The case study presents us with actual financial profiles of six service organizations and six manufacturers. Our task is to identify which is which.

We know the 12 companies by their assets, equity and sales expressed as percentages, the only sensible way to compare companies because absolute dollar amounts will only reveal relative size, not relative use of capital. For example, from our charts and schedules we know that the ratios and figures in column A show a company with 28.66 percent of its assets in inventories and 52.32 percent of its assets in plant assets. Put those two facts in conjunction with its inventory turnover rate of 11 or so days.... Oh, come on, this is a gimme! You've already figured out that column A has to be the report of the supermarket chain, right? And that incredibly low inventory figure in column G must belong to the car manufacturer, because only the auto industry marks a unit sold the moment it rolls off the assembly line. What a business! No cash exchanges hands, but with the stroke of an accountant's pen, every car is eliminated from inventory before it gets to a loading dock.

Wow! Listen to us! We think we know something. This is serious. Back in class we discover that one breakout group has tied the Wharton record, matching 10 of 12 company financial profiles to the correct companies. Camaraderie is such that we all feel a thrill of victory.

The exercise carries over to the real realm of M&A. Knutson explains how analysts spend well-paid lives perusing annual reports and SEC documents searching for the anomalous accounting factoid suggesting that a company is managing assets outside of industry norms. Analysts would be drawn, for example, to a grocery chain that has large real estate holdings in anticipation of growth and, because of conservative management, is keeping debt low. Maybe the odd ratio means nothing at all, but imagine a sharp investment banker swooping down on this minuscule fact and concluding that after a takeover—hostile or otherwise—those tangible assets can be turned into cash flows. By taking loans against the land, the savvy big-time investor could leverage that debt into a new chain of coffee bars in every grocery store, thereby augmenting shareholder return by 40 percent or 50 percent. Oh, sweetheart! Call my broker!

The sleepy management of the supermarket chain just might someday hear the flutter of leather wingtips and feel on their cheeks the hot breath of a takeover specialist poised to strike.

GOING HOME

Friday—last day of the course, a half-day final session that brings together all the instructors for a free-flowing roundtable discussion generated by student questions. How can the financial community justify the valuations of Internet stocks? Why aren't accounting standards internationally established? What happened to the carousing? (Though I hear wild tales that last night a party of executives

It's madness to skip the footnotes of ANNUAL REPORTS. Chicanery, deceit, changes in practice and aggressive accounting are, like God, to be found in the details.

danced and sang the night away at a local club.) Knutson conducts a brief, informal ceremony, and we each are handed a hard-won certificate.

After purchasing my mandatory Wharton T-shirt, I fight through Friday Philadelphia traffic to the Ben Franklin Bridge and head for the New Jersey Turnpike. How much will be retained by these executives who have invested a week in expanding their financial skills? I'm personally hoping to hold on to 50 percent. Realistically, I expect that my retention will shrink closer to 30 percent.

But that's not bad, considering that 30 percent of a lot can be quite a bit. Somewhere north of Cherry Hill, I abandon any doubt I had whether this kind of experience can be vital and important, more than a break in routine. All week I heard executives remark how happy they are to have other people who take care of this numbers stuff. But I also heard the refrain that they expect to fulfill their own jobs with newfound confidence. They'll be listening to CFOs with fresh comprehension. And they'll have financial insights that will enable them to contribute beyond the limits of their job descriptions—which may even lead to unthought of career options.

Send Throckmorton back to school. Who needs the pencil-necked geek, anyway? **CIO**

Senior Writer Perry Glasser can be reached via e-mail at glasser@cio.com.



-pluribus

e plu-ri-bus u|num [[Latin]]

unum

out of many, one.

APPNETTM

the power of e-business

Many firms can get you part of an e-business solution. One will design you a Web site. Another the technology. And a few may even talk a little strategy. But nobody pulled all the pieces together. Until now.

At AppNet, we combine the many disciplines and capabilities you need to create an end-to-end e-business solution. Business consulting. Interactive media and marketing. Applications development. Back office integration. And e-commerce hosting and outsourcing. Out of many disciplines, AppNet supplies the one, single-source solution that brings the power of e-business to your business. For more information, call us toll free at 1-877-581-2400.

www.appnet.com

Chain Safety

Ten precautions to heed when refining your supply chain

BY GARY ABRAMSON

TO THE UNINITIATED, THE PHRASE *supply chain management* may have the quaint ring of the fading industrial economy, conjuring visions of assembly lines, warehouses, truckers and time sheets. And in fact such a vision would come pretty close to describing much of today's business, which—new economy hype notwithstanding—is not taking place primarily in the corridors of cyberspace. Bricks and mortar still matter.

Even so, the traditional vision represents only one dimension of a business environment that is growing increasingly multidimensional. That

Reader ROI

READ THIS STORY TO LEARN ABOUT

- ▶ Assumptions that can blindside well-intentioned supply chain efforts
- ▶ Organizational tips for enhancing supply chain effectiveness
- ▶ Projects that companies have used to aid strategy development

Is waiting
for financial
results
costing
you the
game?

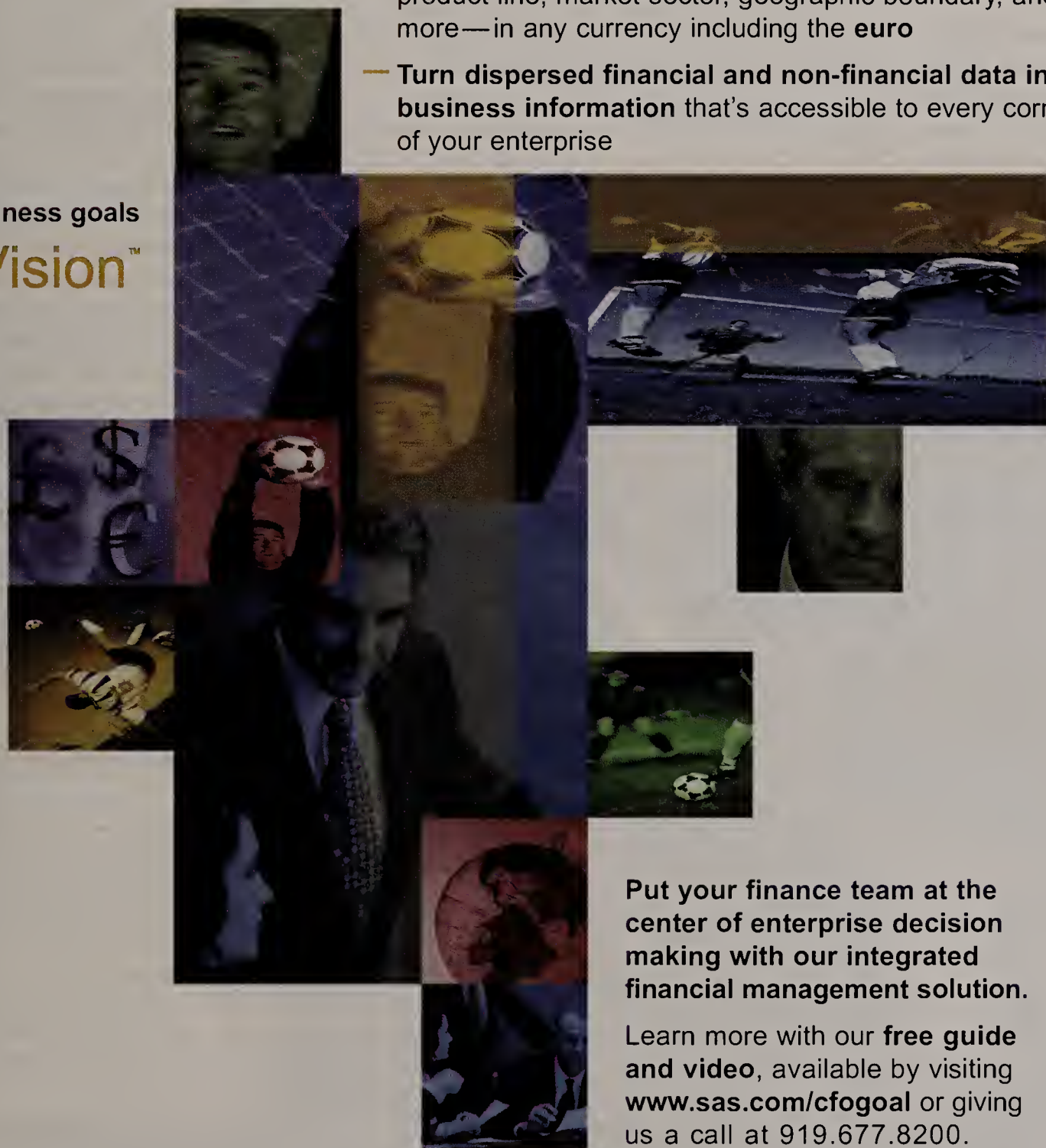
Your finance team plays a pivotal role in helping your company reach its goals...a role that goes far beyond scorekeeping. And—as CFO—you need timely and accurate information to ensure that your team—and your enterprise—gain true competitive advantage.

CFO Vision™ from SAS Institute brings you the software, the support, and the strategy you need to:

- **React quickly to changing business drivers:** acquisitions, mergers, and organizational realignments
- **Visualize your business from every angle**—by customer, product line, market sector, geographic boundary, and more—in any currency including the **euro**
- **Turn dispersed financial and non-financial data into business information** that's accessible to every corner of your enterprise

reach your business goals

CFO Vision™



Put your finance team at the center of enterprise decision making with our integrated financial management solution.

Learn more with our **free guide and video**, available by visiting **www.sas.com/cfgoal** or giving us a call at 919.677.8200.

The Business of Better Decision Making



SAS
SAS Institute

www.sas.com/cfgoal E-mail: cio@sas.com 919.677.8200

In Canada phone 1.877.SAS.INST. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies. Copyright © 1999 by SAS Institute Inc. 23688

multi-dimensionality makes innovation in supply chain relationships not only possible but imperative. Getting a product made, sold and delivered today requires collaboration among members of a supply chain to manage sensitive strategic planning, the flow of information and the compatible design of the underlying IT. Supply chain members must also work together to cope with the political challenges posed by shifting job roles and responsibilities.

Bernard Teiling of Nestlé SA advises taking a broad view of supply chain possibilities.

How can you turn one of the oldest business problems (King Solomon reportedly ordered Lebanese cedar for his temple in Jerusalem) into an advantage in the new, connected economy? Here are some tips from companies and experts in the thick of supply chain improvements.

Get Perspective

ANYONE WHO HOPES TO PUSH HIS OR HER company's supply chain to its best must first take a broad and sophisticated look at the business as a whole, including its current strategy and where it wants to go. Over the last decade, the best CIOs have grown from managers of technology to drivers of strategic change. A comparable challenge awaits any executive who expects to achieve the speed, efficiency and customer satisfaction that supply chain management promises. At companies where a head of supply chain has not been appointed (which is to say, at most companies), leadership of supply chain strategy typically falls to a veteran of manufacturing, procurement

or logistics. Those managers are rarely equipped to see and manage the links between traditional supply chain areas and marketing, branding and product management. That's a problem because supply chain strategy is increasingly being integrated with overall corporate strategy, says Wally Buran, a supply chain specialist and partner in the Atlanta office of Deloitte Consulting.

Therefore, make sure a wide range of executives, or one executive without functional blinders, is in the driver's seat. Don't just think but hire outside the box. "There is a new breed coming through in supply chain management that is not tarred with that functional background, but few are at the VP or C level yet," says James Warner, global leader of the Supply Chain Management Practice at PricewaterhouseCoopers LLP in London. One groundbreaking example of this new generation's taking the reins is a merchant banker who joined a European retail company to manage its mergers and acquisitions. "Things went slack, and so they asked him to look after the supply chain. He was bright and a senior executive," Warner recalls. Success came from his broad view, not previous experience.

Food company giant Nestlé SA feels so strongly about the need for a supply chain perspective that it has devised a short training program for its managers from around the world at its International Training Centre in Vevey, Switzerland. Executive



PHOTO BY MARTIN RUTSCHI / LIAISON INTERNATIONAL

SIEBEL

eSALES • eMARKETING • eSERVICE

"More than 4000 Compaq sales and marketing representatives rely on Siebel applications. Compaq and Siebel eBusiness solutions are establishing a new standard in the industry."

MIKE CAPELLAS
President and CEO

COMPAQ

"Siebel Web-based applications are the tried, tested, and proven market leaders in sales, marketing, and customer service."

SCOTT HARTZ
Global Managing Partner

PRICEWATERHOUSECOOPERS 

"We standardized on Siebel software for our sales and business development activities. We are excited about their new Web-based products."

CHARLES SCHWAB
Chairman and Co-CEO

Charles Schwab

"While other vendors talk, Siebel delivers Internet-based solutions."

CRISTINA MORGAN
Managing Director

HAMBRECHT & QUIST
Investment Banking for the New Economy

"Siebel Systems' Internet-based applications empower our employees and our customers with up-to-the-minute information."

LEW COLEMAN
Chairman

Banc of America Securities LLC
Bank of America.



"Thousands of our sales and service representatives are now able to better serve millions of customers every day as a result of our standardization on Siebel's Web-based products."

OMAR LEEMAN
President Business Operations


MCI WORLDCOM

"Siebel Systems fully supports Internet self-service and eCommerce."

ERIC SCHMIDT, PH.D.
Chairman and CEO

Novell

"Only Siebel delivers true Web-based front office applications."

DOUGLAS MASSINGILL
President and CEO

JD Edwards
Enterprise Software

SIEBEL

THE LEADER IN FRONT OFFICE eBUSINESS

For more information, visit us at www.siebel.com or call 1-800-273-9913 EXT-102009

SAN MATEO CHICAGO BOSTON NEW YORK LOS ANGELES LONDON SYDNEY PARIS MUNICH TOKYO MEXICO CITY
© 1999 Siebel Systems, Inc. All rights reserved. Siebel is a registered trademark of Siebel Systems, Inc. All other product names, marks, and logos may be the trademarks of their respective owners.

Vice President and CFO Mario A. Corti expanded his awareness of supply chain strategies while CFO of Nestlé USA in Los Angeles in the mid-1990s. He has now motivated the company to teach its managers to relate supply chain decisions to the future market valuation of the company. The program uses a modeling tool from Powersim Corp. of Herndon, Va., that "captures some simple ideas about how goods are flowing

from supplier to manufacturer to distributor to consumer," says Bernard Teiling, assistant vice president of business process integration at Nestlé headquarters. Over a day-and-a-half, managers simulate the next six years of supply chain management and the consequences for the company as a whole. Typical options include optimizing factory performance, increasing the flexibility of production at one or several factories with highly seasonal demand, perhaps closing another, shifting distribution centers or helping a

retailer manage inventory. The complexity builds progressively. The 2-year-old training project is now expanding into some country units of Nestlé, bringing together managers of product divisions and national markets. "In the consumer packaged-goods industry," Teiling says, "you succeed only if the entire chain functions properly." Hence the need for managers from different departments to work together. "In the same way that an instrument panel has many variables, a supply chain is a combination of responsibilities that come together, so we have at least three people share the scenario...one may be from manufacturing, another from distribution, another from sales and marketing; they need to come together to understand how they jointly create value."

Savings galore?

Inventory being held across the retail supply chain at any one time amounts to \$1 trillion, according to a report by Benchmarking Partners, based on U.S. Dept. of Commerce data. The Cambridge, Mass.-based consulting firm estimates 15 percent to 20 percent of those inventories (\$150 billion to \$200 billion worldwide; \$40 billion to \$50 billion in the United States) could be eliminated through improved planning, forecasting and replenishment.

Don't Underestimate Learning Costs

ALTHOUGH NOT A PROBLEM EXCLUSIVE TO supply chain management, the cost of training people to use new software is still easily underestimated. "With the technology we have today, you can send information around the world in a second, but it can take days to get into someone's mind," sums up Tom Pike, CIO of Nashville, Tenn.-based Magnatek Inc., a global manufacturer of electrical products such as motors, generators and lighting ballasts. Two consulting firms advised Magnatek to count on training and change management as significant costs of improving its supply chain management. To which Pike would add the opportunity cost of not having those employees doing something else with their time and the travel costs for his geographically dispersed company of 13,000 employees.

Reconsider What's Efficient

SOURCING MANUFACTURING IN EMERGING market nations rather than the United States can seem like a cost-saver, but it may end up being more expensive in the end. Magnatek found that although its factories in Mexico were efficient because of low labor costs, most of the products were destined for the Great Lakes region of the United States, so it would be cheaper to transfer production back to the company's older and larger factory in Tennessee, and thus save on shipping costs.

Likewise, Magnatek realized that its sophisticated hub-and-spoke distribution system centered outside Nashville was not necessarily the most efficient way to cover long distances. It has now begun shipping some products directly from a factory to the customer, leapfrogging the distribution center that had supposedly rationalized logistics. But straight as the crow flies isn't always the answer either. If trucks sent to a customer are not full, the transportation cost per unit of product will be high and may well justify going back to the hub. Relearn your geometry: A straight line is the shortest distance between two points—most of the time.

Serve Your Partners

WHEN IS A SUPPLIER NOT MERELY A SUPPLIER? When it knows how to manage its customers' inventory. In fact, suppliers that do not share their supply chain finesse with their customers

could soon be left behind by those that do. A handful of companies are engaged in pilot projects in which they not only manage but own their customers' inventory. Deloitte's Buran cites Earthgrains, a St. Louis-based baker, that has its drivers deliver and scan each product as it is placed on the shelves at Wegmans Food Markets in New York and Pennsylvania. Wegmans doesn't devote any time to keeping track of the arriving shipment; the receiving clerk need no more than wave to the delivery person. Most radically, the baker owns the bread until it crosses the checkout scanner, reducing the retailers' risk to zero.

Buran recalls another client, a manufacturer of packaging materials, that offered to solve the procurement problems of a customer who had more than a dozen other suppliers of complementary packaging materials. The manufacturer agreed to handle procurement of all packing materials and ready the client's product for shipment in exchange for 100 percent of the client's packaging business. It worked so well, the packager is offering this service to other customers and has created a \$350 million business in the process.

Break Up the Turf Wars

ALTHOUGH THE EXECUTIVE MANAGING THE supply chain has the company's best interests in mind, he or she ought to look carefully at the habits and motives of other departments that might resist innovations. And then make an argument for the overall supply chain priority to the conflicting departments. For example, a common complaint of supply chain executives is that the sales organization's drive to meet its end-of-period goals "creates inefficient and costly peak demands as well as unnecessary work resulting from returned orders," according to a recent study by KPMG LLP in which executives at 21 companies were surveyed about their supply chain practices. At the same time, manufacturing chiefs seeking to bring down their costs want long-term forecasts and long lead times. But the same survey found that accepting those preferences leads to otherwise avoidable excesses and shortages in product supply, raising costs and losing revenue. An executive with a vision of the overall best interests of the

Soon, the boss may
approach you with a new idea
for your PBX system.
Be ready.

www.mobile-advantage.com

Mobile Advantage™
WIRELESS OFFICE

ERICSSON 

Ericsson Inc.
Digital Wireless Office Services
Research Triangle Park, North Carolina

© Ericsson Inc. 1999
Mobile Advantage is a trademark of Ericsson Inc.



Magnatek's Tom Pike warns of hidden costs in training and logistics.

supply chain process must make the call on whose efficiencies are most important.

In a similar vein, Statoil AS, the Norwegian state oil company, found that it was allowing different business units to misbalance supply chain priorities because each sought to maximize its own profits. The unit that produces propane gas, a byproduct of oil extraction, wanted to keep production at a steady rate for efficiency. Shippers wanted bulky and highly predictable production to make it easier to schedule and fill tankers. Sales wanted heavy production in the winter, matching demand. They couldn't all win, of course. "When you optimize subsystems, you suboptimize the system," explains Michael Bean, vice president of Powersim, the software provider that Statoil used to run supply chain simulations. As a result of those simulations, the company shifted priorities and reconfigured business units

in the chain for the good of the whole. Contrary to the commonly perceived logic of supply chains, Statoil found that increasing propane inventory would reduce shipping costs and enable it to sell the highest volume at peak moments of demand.

Let the IT Configure You

SAD TALES ABOUND OF great, strategic IT implementations that went far beyond projected time and budget because they had to be customized to a company's business processes. But not everyone need fall victim to that. Olympus America Inc., a manufacturer and distributor of cameras and medical devices in Melville, N.Y., tackled its supply chain implementation by reengineering its operations to fit the business processes of J.D. Edwards' software. "There were some areas of resistance [within Olympus to imposing the software's discipline]. We had to articulate what [internal clients] wanted," says Olympus Vice President

and CIO Lee G. Wachter. Salespeople, for example, were used to having commissions triggered by a sales order, and the software Olympus was implementing was configured to trigger commission when the goods were shipped. That meant a delay in payment for salespeople but a more logical way of operating a supply chain: "Now we're not issuing commission on orders that can be canceled," Wachter explains. The software configuration also led to the creation of a single customer master file through consolidation of customers across different operating divisions, replacing the practice of having separate divisions in the company keep information about the same customers. It also unified its product listings so that different business units would not be selling the same products under different numbers. Wachter championed changes in human behavior as being more businesslike and less costly than changes to the IT.

PHOTO BY CHRIS CASABURI

Don't Overestimate IT

WITH MANY SOFTWARE VENDORS NOW routing Web-enabled products to streamline work with other businesses, it is tempting (though expensive) to overestimate the current state of connectivity. Only a few companies are far along in Web-enabling their supply chains. Truth is, most of American industry is in the middle of a battle over data communication standards, and the Wal-Marts, Krogers and other large players would each like its house-developed system to become the standard for data transmission.

"The key issue today is the connected supply chain, the value web," says Christopher Gopal, national director of supply chain and operations consulting for Ernst & Young LLP in Cleveland. Web-based monitoring systems and collaborative planning systems are the present for some companies and the future for most. But many obstacles remain to compatibility and sharing of information. "Different members of a supply chain have

different metrics, data definitions, part numbering systems and different ERP systems. Getting collaboration is complex," Gopal says. The software vendors that solve those problems will be in great demand. "Those systems that are able to interface are the ones that are going to be able to drive competitiveness," he adds.

One company that began venturing into Web-enabled pilots in mid-1998 is Nabisco Inc., the dry foods manufacturer in Parsippany, N.J. "We know we need some kind of collaboration software; we need to be able to plug into the customers' forecasting system," explains Gerard Cantwell, director of customer service. But that is easier said than done. "There are blind spots: A lot of the systems are not set up to handle the level of cooperation and detail [that Nabisco would like]," Cantwell says. Ultimately, Nabisco wants to be able to share viewability of its customers' and its own forecasts, using the real-time changes to improve, say, distribution. In one trial run using new software from Syncra and Manugistics, Cantwell says, Nabisco has cut inventory by 18 percent at its customers' distribution center.

If decisions regarding your
office phone system are overly
influenced by torn-out magazine ads,
have we got a URL for you.

www.mobile-advantage.com

Mobile Advantage™
WIRELESS OFFICE

ERICSSON 

Ericsson Inc.
Digital Wireless Office Services
Research Triangle Park, North Carolina

© Ericsson Inc. 1999
Mobile Advantage is a trademark of Ericsson Inc.

a retailer says its other suppliers are offering fewer deliveries that include a wider range of products, combined ordering and a consolidated bill. To accommodate those demands, the supplier must change dramatically. "Those who can't integrate and simplify to develop customer interfaces are going to get clobbered," Deloitte's Buran predicts.

Create a Sharing Culture

IF YOUR SENIOR MANAGEMENT is full of people who probably flunked sandbox, don't try supply chain management without giving them a refresher course in sharing. Take the case of a large computer distributor whose leaders did not want to share any data or engage in collaborative planning. "They were scared the vendors would learn too much about their customer and demand patterns, and [that they would] get disintermediated," recalls Steven Y. Gold, a partner in KPMG's supply chain strategy practice in Chicago. A newly arrived CEO had a vision of sharing more real-time information via an Internet-based tool with his trading partners, "but others in the organization resisted this new technology in a big way due to its

organizational and redesign requirements. So the CEO contracted directly with the vendors [of collaborative supply chain software]. It was pretty brutal for some time; he got zero cooperation from his direct reports, and we were in the middle." By the time the mess was cleaned up, several of the resistant senior executives had been excused, the CEO was let go by the board, and the vendor was left hanging. "It was the right solution, but internal resistance to sharing information put the whole project [in jeopardy]," Gold says.

PHOTO BY JON MURESAN

Test the waters before diving in, counsels Vic Leo of Ford.

Organize for Flexibility

AS SUPPLIERS AND CUSTOMERS REORGANIZE for efficiency, companies can get caught being unable to compete if they can't match customers' ways of operating. Take for example a supplier of foods whose operating divisions—frozen food, refrigerated food, dry goods—each had its own order, delivery and billing systems. Then one day,



www.ibm.com/magicbox

THE MAGIC BOX IS FAST.

The magic box is an IBM® business server.

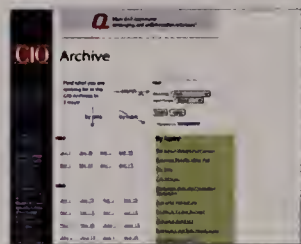
ON THE WEB, SPEED RULES — IF YOU DOUBT IT, SEE HOW LONG A CUSTOMER WILL HANG AROUND A SLUGGISH WEB SITE. IBM RS/6000® UNIX® SERVERS RIP. THE RS/6000 S80 IS THE FASTEST WEB SERVER IN THE WORLD. THREE OF THE FIVE FASTEST WEB SERVERS IN THE WORLD ARE RS/6000'S*. WE EVEN BUILT A UNIX SERVER CAPABLE OF A RATE OF 3.88 TRILLION CALCULATIONS PER SECOND (FOR PERSPECTIVE, IT WOULD TAKE SOMEONE WITH A CALCULATOR 63,000 YEARS TO DO WHAT THAT IBM SERVER CAN DO IN A MERE SECOND).

IBM, the e-business logo, RS/6000 and SP are trademarks or registered trademarks of International Business Machines Corporation in the United States and/or other countries. UNIX is a registered trademark of The Open Group. *S 80 performance claims based on SPECweb96 results which are current as of 7/13/99. SPECweb96 reports available at www.specbench.org/osg/web96. © 1999 IBM Corporation. All rights reserved.

RS/6000 SP

LEARN FROM OTHERS

The Archives



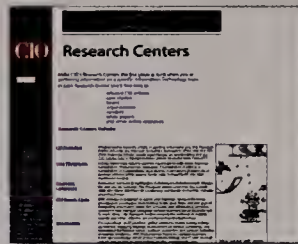
Read the full text of *CIO* and CIO.COM articles dating back to 1994. You can even send an article to a colleague.

EXPERTISE BY TOPIC

Research Centers

Make CIO.COM's Research Centers the first place to look when you're gathering information on specific IT topics like.

- Year 2000
- Data Warehouse
- Electronic Commerce
- ERP/Supply Chain
- Globalization
- Government
- Human Behavior/Web
- Intranets
- IS Staffing
- IT Careers
- Knowledge Management



INCONVENIENCE OR CATASTROPHE

Y2K Pain Index

This chart of Year 2000 probabilities shows how the Year 2000 software glitch will affect you based on connectivity to external organizations and business partners.



INSIGHT ON IT STRATEGIES

Analyst Corner

Reports and analysis from the top research organizations help you put sound IT strategies together for your organization.



cio.com

get smart. fast.

GOT A PROBLEM?

Ask the Expert

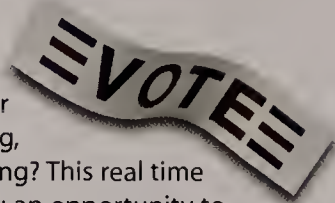
Pose a question to top IT experts and get a personalized answer. Do it as often as you please.



REAL TIME OPINIONS

Quick Poll

What are your peers thinking, doing, planning? This real time poll gives you an opportunity to vote and see results instantly.



TALK TO YOUR PEERS

Discussion Forums

Read an article in *CIO* magazine and want to discuss it further? Join our forums.



FIND YOUR DREAM JOB

CIO Wanted

Looking for a job? Want to enhance your career? Look no further. And don't forget to bookmark it - we update job postings daily.



LISTEN UP

CIO Radio

Audio specifically geared toward the CIO. Hear interviews with notable, quotable experts on critical IT issues.



SPEND SOME TIME WITH A RESOURCE YOU CAN TRUST

CIO Communications, Inc., 492 Old Connecticut Path, Framingham, MA 01701

Think Global, Start Local

A SUPPLY CHAIN IS A COMPLEX SYSTEM, AND tinkering with it on a global scale could yield unpredictable results. Vic Leo, manager of organizational learning at Ford Motor Co. in Dearborn, Mich., has found a way to reduce this risk by launching a series of pilot supply chain projects, while resisting executives' demands for speedy global rollouts. "Putting your ideas and principles into action is critical for learning," Leo says. In order to do that, he runs projects according to the methodology of organizational learning, using small meetings to tease out what managers in various parts of Ford's supply chain really think about how the system in question works, and then putting those managers' assumptions and process flows into a simulation model.

For nearly 30 years, Leo says, managers have been tinkering at the edges of material release systems—the mechanism to trigger orders and delivery throughout the chain. "At some point, the

systems get totally beyond the grasp of any individual or team; the simulation world allows you to think big again," he says.

The simulation began using one Ford plant in Wixom, Mich. Though the pilot was very suc-

"At some point, the systems get totally beyond the grasp of any individual or team."

—VIC LEO, MANAGER OF ORGANIZATIONAL LEARNING, FORD

cessful in improving supply chain management, Leo has had senior Ford executives pounding the table in front of him, demanding to know why he can't work his learning organization magic on a fast, global scale. But he resists. "Gambling [on a companywide rollout] in this day and age is going to be a disaster for companies." **CIO**

Gary Abramson is a former senior writer at CIO.

Before you can protect this...

You have to protect this...

Theft. Vandalism. Espionage. Accountability.

You've got a lot to worry about. The first step in safeguarding your vital information is securing who has access to your property, and when. Hirsch offers a full line of security management systems to meet individual needs, from single-door controllers to **MOMENTUM™**, Hirsch's complete Enterprise-Class solution

that can scale up to cover multiple sites around the globe. More and more facilities are choosing to put their door access control systems on the corporate LAN/WAN and controlling hundreds of doors for thousands of users.



Upgrade to Hirsch. Securing people and property since 1981.
949-250-8888 www.hirschelectronics.com

Designed for
 Microsoft®
BackOffice®

Does KM = IT?

There's a dangerous idea making the rounds that could retard your knowledge management efforts

BY CAROL HILDEBRAND

OF ALL THE BUSINESS TRENDS OF THE PAST decade, perhaps none—possibly excepting reengineering—is more closely associated with technology than knowledge management. Quality circles don't demand a computer. Nor does the development of a learning organization or the adoption of a balanced scorecard. Technology will likely play an enabling part in these activities but not to the extent occasioned by knowledge management. In fact, KPMG LLP's Chief Knowledge Officer Michael J. Turillo says that "knowledge management cannot be done without technology."

Maybe not. But knowledge management is in danger of being perceived as so seamlessly entwined with technology that its true critical success factors will be lost in the pleasing hum of servers, software and pipes. As vendors label their document management, database or groupware products "knowledge management solutions," executives can be excused for mistaking the software for the solution. It's not.

Yogesh Malhotra, founder, chairman and CKO of the @Brint Institute in Fort Lauderdale, Fla., and @Brint LLC, a Web site devoted to knowledge management (www.brint.com), has identified some myths that surround the murky confluence of information technology and knowledge management.

MYTH: Knowledge management technologies deliver the right information to the right person at the right time. Malhotra says that this idea applies to an outdated business model. Information systems in the old industrial model mirror the notion that businesses will change incrementally in an inherently stable market, and executives can foresee change by examining the past. "The basic premise is that you can predict...how and what you'll need to do and that IS can simplify this and do it efficiently," he says. The new business model of the Information Age, however, is marked by fundamental, not incremental, change. Businesses can't plan long-term; instead,

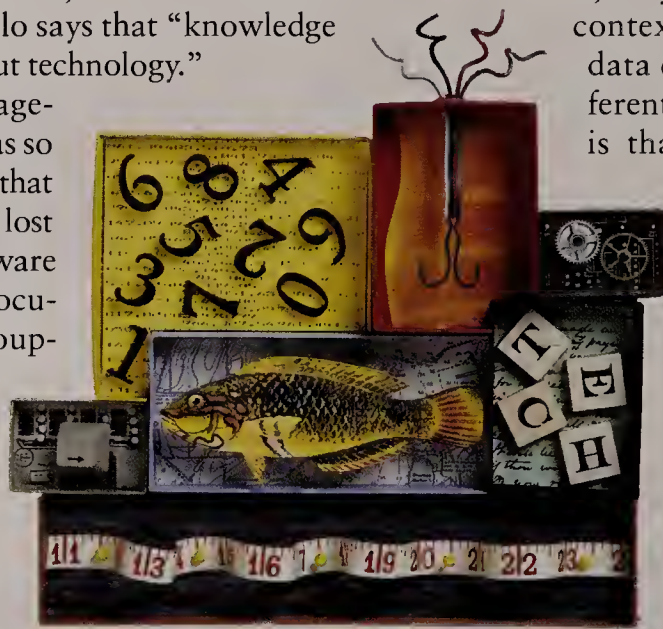
they must shift to a more flexible "anticipation-of-surprise" model. Thus, it's impossible to build a system that predicts who the right person at the right time even is, let alone what constitutes the right information.

MYTH: Information technologies can store human intelligence and experience. Technologies such as databases and groupware applications store bits and pixels of data. "But they can't store the rich schemas that people possess for making sense of data bits," says Malhotra. Moreover, information is context-sensitive. The same assemblage of data can evoke different responses from different people. "The reason this is important is that many information textbooks say that while people come and go their experience can be stored in databases. But unless you can scan a person's mind and store it directly into a database, you cannot put bits into a database and assume that somebody else can get back the experience of the first person."

MYTH: Information technologies can distribute human intelligence. Again, this assumes that companies can predict the right information to distribute and the right people to distribute it to. And bypassing the distribution issue by compiling a central repository of data for people to access doesn't solve the problem either. "The fact of information in a database doesn't ensure that people will see or use the information," Malhotra says. "Most of our knowledge management technology concentrates on efficiency and creating a consensus-oriented view. The data therein is rational, static and without context." And such systems, he adds, do not account for renewal of existing knowledge and creation of new knowledge.

So when you next hear that KM is an IT-based activity, capitalize the *I* and lowercase the *t*. **CIO**

Senior Editor Carol Hildebrand can be reached at cjh@cio.com.



Data Access Problems Driving You Mad?

Your sales frantic group department needs a(n) custom adjective application that provides
real-time access to inventory important info data. That information
and DB2 incompatible database #2 currently resides in Oracle incompatible database #1
and flat files other data source at your offices
located in Seattle west coast city and San Diego nice warm place
and Manhattan east coast city
thanks to Cerebellum easy-to-use solution Software. No problem,

www.cerebellumsoft.com

(Let us fill you in.)

Creating new applications for your company should be this easy. Your end users need access to information, and they don't care where it lives. Neither does Cerebellum™. Cerebellum's single interface lets your development team access, integrate, and manage data from multiple data sources, regardless of vendor. We call it data independence. You'll call it a way to develop new applications in half the time and with less specialized expertise. www.cerebellumsoft.com 1-888-862-9898



Cerebellum
S O F T W A R E

Declare Data Independence

Cerebellum is a trademark of Cerebellum Software, Inc. All other product and company names are trademarks or registered trademarks of their respective companies.

Nixing the Naysayers

Here are some ways to go toe-to-toe with executives who argue that IT investments are unproductive

BY GLENN M. MILLER

WORDS A CIO DOESN'T WANT TO HEAR AT a budget committee meeting: "Why are we considering another big IT investment?" This question is commonly asked by senior business executives who believe that technology investments do not improve business productivity, an argument that is known as the productivity problem. The executives believe that IT investments don't make a measurable contribution to their businesses because IT investments don't show up in the productivity numbers. If enough executives on the budget committee agree, it can be difficult for IS departments to get funding for projects with high potential for delivering business results.

Supporters of the productivity argument back their position with data from U.S. aggregate economic statistics. The two most common business productivity ratios are growth in economic output divided by growth in IT spending and growth in economic productivity divided by growth in IT spending. The historical trend lines of each of the two ratios typically do not indicate positive correlations. Economic analysts sometimes assert this fact at seminars attended by finance officers, strategic planners and other executives. These executives then bring the argument to their budget committee meetings: "The latest figures show once again that IT investment is not positively correlated with business results, so we don't need to fund the requested budget increase for IS."

Why Doubts Persist

In recent years, even though the IT trade press has documented case after case of companies that have enjoyed great success

through the incisive use of technology, the productivity argument is still raised in corporate boardrooms. There are three common reasons it doesn't go away: political dynamics (executives don't feel adequately supported by IT), the alignment challenge (they can't see the IT value in business initiatives) and the measurement challenge (they can't compare IT value with alternative investments).

The political dynamics issue typically comes up when internal IS service levels are low. If the finance department is not being supported to its satisfaction or the strategic planning committee members are not happy with IS service levels, they will often bring the productivity argument up in order to force the CIO to either improve those levels or, in extreme cases, leave. Alignment (or lack of it) contributes to the productivity argument when IS acts only as a service bureau that provides basic back-office production functions instead of focusing on how IT can be used as a competitive weapon. In companies that are using IT to create new markets, capture new customers and develop new prod-

ucts, executives can see the value IT adds to the business. The measurement challenge comes up when the budget committee is wrestling with investment choices. In trying to decide between funding an IT spending increase or a business unit initiative, the committee must be able to make some kind of ROI comparison between the two. If there are no commonly accepted metrics for IT value in the organization, executives will fall back to these high-level aggregate ratios, since they are available. When that happens, IS will lose in most of the comparisons.



Is your e-business built on a house of cards?



Your e-business needs a strong foundation. You need Digex.

Has your Web site been stress tested? Does your company maintain an inventory of spare server parts? Do you invest more time in managing technology than in growing your e-business?

If your company hasn't answered these and other critical questions involved in running a successful e-business, Digex can help. Digex's only mission is to deliver secure, scalable, high-performance Web and application hosting solutions.

Digex customers—including Nike, American Century Investments and Forbes—have outsourced the management of their Web site, extranet or intranet to Digex. Why? Because

Digex operates enterprise-class Web hosting facilities and has the technical expertise available on-site 24x7 to keep your e-business in business. We continuously invest in these assets so our customers don't have to.

To build a solid foundation for your e-business, call Digex at **1-888-Digex03** or visit **www.digex.com**.

digexSM

Digex keeps e-business in businessSM

© Digex, Inc. 1999

Checks & Balances

This argument might have been valid in some instances back in the days when business success could still be measured in units shipped per unit of time, but it is hopelessly outdated today. Success is now measured by consumer-based patterns instead of producer-based patterns.

What do I mean by that? Essentially, producer-based patterns are measured in terms of units shipped and revenues collected. Under that measurement scheme, one dollar (collected from a new

on the Internet, and standard aggregate productivity ratios are grossly inadequate to capture the essence of the changes in consumer behavior and market dynamics.

Beating Back the Productivity Argument

There are three tactics that a CIO or other executive championing IT investment can use to fight the productivity argument.

measurements and building consensus about the importance of those metrics. By creating systems and processes that measure (and publicize internally) growth in SKUs, product line, market base, customer retention rates, customer development and customer satisfaction, the CIO will be influencing the culture to value the most useful measurements.

Defusing/confusing the opposition involves casting doubt on the relevance of aggregate data ratios. One way to do

The CIO needs to achieve at least one major front-office IT success per year with an influential business unit—and publicize it widely.

customer) is as good as another dollar collected from a repeat customer), and one unit (a VCR with three features) is as good as another unit (a VCR with 24 features).

But consumer-based patterns are measured in market structure, breadth of product offerings and customer satisfaction. For example, let's assume a company had two VCR models five years ago and sold 100 of them that year. Today that company sells 20 models of VCRs but still sells only 100 units. Assuming that the revenue amounts were equal, there would be no gain in productivity (100 units equals 100 units) but an immense gain in fit between the customer and the product (two types of customer versus 20 types of customer). In other words, as a company widens its product line—often by heavy IT investment—those products better meet the desires of its customers. The general rule is that the greater the product selection, the greater the customer satisfaction. And customer satisfaction leads to customer retention, then to customer loyalty and eventually to lower costs of sales.

Closely related to a growth in product line are IT-facilitated market structure changes. When I shift my sales of 100 units from retail floor selling to Web-based selling, the units are still the same, but the business repercussions of that shift are staggering—lower costs of selling, lower retail real estate costs, wider geographic reach, to name a few. New markets are created almost daily

1. PREVENTION

This tactic attempts to make sure the argument never comes up. To do this, the IT champion needs to address those three basic reasons the productivity argument still rears its ugly head. To deal with political dynamics, the CIO must have service level agreements in place, must be meeting those SLAs and above all must make sure peer executives are aware of IS's performance. She needs an active communication program that gets end-user input from all functions, especially the finance and strategic planning groups, and needs to have an intelligence network that alerts her to customer dissatisfaction issues. For the alignment challenge, the CIO needs to achieve at least one major front-office IT success per year with an influential business unit—and publicize it widely. For the measurement challenge, the CIO needs to have a dossier of ROI estimates from business-unit executives that are based on actual projects. Each joint project between IS and a business unit needs to conclude with an official estimate by the business-unit executive of what the IT value contribution was (by percentages of the overall business ROI, for example). These estimates will provide a range of gains attributable to IT.

2. DEFENSIVE TACTICS

These fall into two categories: demonstrating gains and defusing/confusing the opposition. Demonstrating gains involves preparing customer-focused

this is by finding an academic study that demonstrates a productivity gain due to IT for a smaller sample than the United States. A second approach is to point out that the aggregate data is an average of all industries and therefore not specific enough to be useful when discussing IT investments.

3. ROOT-CAUSE ANALYSIS

This tactic tries to discover the root of an executive's belief that IT investments are unproductive. If her anti-IT convictions spring from any of the reasons discussed above, address those issues first. Debating the adequacy of aggregate measures for IT investment decisions won't do a bit of good if the CFO cannot get her management reports in a timely fashion.

The earliest human writings discovered so far date back to 4000 B.C.—and they are accounting documents. Accounting measurement systems have a head start on IT value measurement, but by measuring the factors that really drive business today and paying attention to political and alignment issues, smart companies can develop a culture in which the productivity argument is totally unproductive. **CIO**

Glenn M. Miller is a former CIO and currently produces executive development video courses for CIOs that focus on business and political skills. He can be reached through www.BizSkills-for-IT.com.

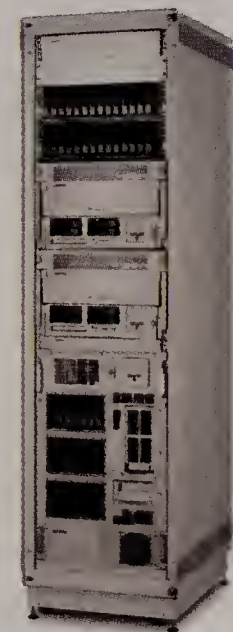


©1999 Compaq Computer Corp. All rights reserved. Compaq, the Compaq logo, and NonStop, the e-Business Solutions and Better answers are service marks of Compaq Computer Corporation. Intel Inside logo, Pentium and Pentium Pro are registered trademarks and Pentium is a trademark of Intel Corporation.

How can my
business race
ahead on the
8-way highway?

The Compaq ProLiant 8000 and 8500 servers have redefined industry-standard technology, yet again. With its revolutionary new 8-way scalable architecture, Compaq brings enterprise customers a new generation of powerful ProLiant servers. They deliver breakthrough

scalability, higher levels of reliability and unbeatable price performance for NonStop® e-Business Solutions. They're backed with business-critical Compaq services, tailored to your needs. And, since Compaq co-developed the crucial ProFusion® 8-way architecture with Intel®, no one knows it better. For all the powerful advantages of the 8-way revolution—breakthrough performance, scalability and reliability—there's just one road to take. Details? Visit www.compaq.com/8-way, or call 1-800-AT-COMPAQ.



COMPAQ Better answers.SM

Stand and Deliver

IT takes the guesswork out of scheduling home deliveries at Sears

BY DAINTRY DUFFY

DURING THE GULF WAR, A STALLED TRUCK represented a potentially life-threatening situation to Lt. Gen. William G. (Gus) Pagonis, the commander of all logistical support for Operation Desert Storm. With temperatures soaring to 130 degrees in the blazing desert sun, the failure of a commissary truck to show up on time would have left soldiers in a vulnerable position—stranded without food or water rations and in real danger of dehydration. Now that Pagonis is retired from the Army and in charge of logistics for Sears, Roebuck and Co., the consequences of a truck breakdown are not quite as dire. But delayed deliveries aren't exactly good for business—especially when frustrated customers have taken time off from work to wait for the delivery truck.

For the 4.8 million customers who receive home deliveries each year from Sears, the frustration of not knowing when goods will arrive is a thing of the past. From the surveys, telephone interviews and focus groups that Sears has conducted to track what it calls the customer experience, the Hoffman Estates, Ill.-based retailer recognized that for many of its customers, the final delivery of their purchase forms their lasting impression of the company. In 1997, Sears became the first retailer to apply sophisticated logistics algorithms to tighten its home delivery process. The system has achieved some remarkable results, winning praise from customers who appreciate having their deliveries arrive when promised as well as from Sears executives who applaud the cost savings.

The importance of logistics—and the implications for customer service—became clear to Arthur C. Martinez, chairman

and CEO of Sears, in 1992 when he read Pagonis's book, *Moving Mountains: Lessons in Leadership and Logistics from the Gulf War* (Harvard Business Press). Martinez was so impressed by Pagonis's application of military logistics to the business arena that he offered him the position of vice president of logistics. Although Pagonis had no previous business experience, he accepted the job upon retirement from the U.S. Army in October 1993.

When Pagonis arrived, he found logistics personnel buried within each of the company's business groups. Because respon-

sibility for the function was so decentralized, determining the origin of problems proved next to impossible. With Martinez's blessing, Pagonis made the Sears Logistics Group the single point of contact for all of the company's logistics issues. Martinez himself helped clarify the chain of command by putting Pagonis on the executive committee and promoting him to executive vice president, leaving little doubt as to the importance he placed on logistics.

Early on in his career at Sears, Pagonis started working very closely with Jerry Miller (then the vice president in charge of technology of the newly formed logistics group and currently vice president and CIO for all of Sears).

When complaints about home delivery delays became a constant refrain in customer focus groups and surveys, Pagonis and Miller decided to create a logistics system to address the problem. The system would need to factor in a wide range of variables so that Sears could give customers a more precise window within which deliveries would take place. It was a tall order because, according to Miller, no one had ever combined geographic information system (GIS) technology with the algo-



ILLUSTRATION BY ART VALERO

Seamless communications

Infonet offers multinationals
global communications that are snag-free.

Seamless global communications are an absolute necessity for a multinational's mission critical applications. Infonet's global communication solutions are customized, innovative, reliable, secure, cost-effective. And fully managed end-to-end over our global multi-service network. Infonet offers local support in more than 60 countries and connections in over 180. You get snag-free services that let your business run as smooth as silk. Global communications services for multinationals.

infonet

www.infonet.com

Europe - Middle East - Africa + 32 2 627 39 11 Asia Pacific + 65 734 1739 North America + 1 310 335 2600 Latin America + 56 2 368 9400

Handshake

rithms needed to create a detailed delivery system. "We basically had to develop new algorithms," he recalls. "We had to look at a number of different dynamics: types of products, times of day, delivery schedules." The new system had to take into account that delivery of a washing machine might take longer than the delivery of a TV, or that an installation on the third floor of a building would take longer than one on the first floor. All of these disparate factors had to be incorporated to optimize scheduling and to map out a delivery route and schedule for each truck.

After two years of development, the Enhanced Home Delivery System (EHDS) hit the streets—quite literally—in the first quarter of 1997. The system, created in partnership with ESRI Inc. of Redlands, Calif., couples GIS technology with a decision-support tool. It allows Sears to provide customers a delivery date at the point of sale. The night before the delivery is scheduled, EHDS figures out the best route for a truck to follow, and then a Sears representative calls the customer with a two-hour delivery window. The system creates a map of the exact route that each delivery team will drive, and teams have the option of printing their maps to take with them.

On the day of delivery, a voice response unit (VRU) application helps Sears track the progress of each driver; drivers call in to an 800 number and submit arrival and departure times for each stop to an automated routing computer. That information immediately updates a tracking database watched by individuals referred to as route monitors. If a driver is running late and getting close to the threshold of a delivery window, all affected deliveries will turn yellow on the monitors' screens to indicate a warning. Once information indicates that a delivery will not make the promised window, that delivery turns red on the screen, alerting route monitors to dispatch another truck or reschedule the delivery. The system can also adjust for recurring traffic patterns. If roadwork clogs one street or rush hour traffic crawls along at 15 mph between 4 p.m. and 6 p.m. on another, drivers forward that information to the manager of that particular market so it

can be entered into the geographic database to aid future route optimization.

At first, delivery team drivers resisted the new technology and insisted that they surely knew the routes that they drove each day better than a computer would. Sears' Direct Delivery Channel

business partners conducted a class called "EHDS 101" for the drivers and their managers to show how the system worked and to diffuse some of the reluctance. Miller maintains that the tempest blew over quickly and that drivers soon gained confidence in the system.

Proven Tactics

What worked in the Gulf gets results at Sears

YOU MIGHT THINK THAT RETIRED LT. GEN. WILLIAM G. "GUS" PAGONIS'S TRANSITION from leading a military unit to managing civilian employees of a retail company would have been difficult. But in his role as executive vice president of logistics for Sears, Roebuck and Co., the retired officer has found that the leadership techniques he acquired in his 30 years of service in the Army are surprisingly effective.

Early in his career at Sears, Pagonis banned sitting at most staff meetings. Four

mornings a week he meets with his top staff members from 8:30 to 8:45 for a quick update session; because nobody has the opportunity to sit down and get comfortable, the meetings start and end on time. "People aren't afraid to not say something," says Pagonis, adding that as a result the group rarely gets bogged down by nonessential conversation. "We probably cover more in 15 minutes than other groups do in three hours," he claims.

Pagonis also imported the military practice of reporting three ups and three downs. Every week Pagonis asks each of his executives to come up with three positive things that have happened on a project or within the workgroup as well as three negatives—and for each of the negatives, the executive must supply a suggested fix. According to Pagonis, this technique ensures that negative information flows to the top of the organization where people can act on it and prevents workers from

spinning their wheels on the same problems for weeks at a time. "Bad news does not get better with age," Pagonis points out. "Everything that is screwed up, I know about."

Pagonis insists that executives pass along their three ups and three downs on 3-by-5 index cards. In fact, he's formatted a template on the corporate network so that employees can submit virtual cards to him in e-mail form. This practice has stemmed the flow of long-winded memos that pile up on his desk. He receives between 50 and 60 index cards per day and says he's able to zip right through them all.

At least one of Pagonis's unique management practices has become part of the Sears culture. Pagonis requires employees outlining a project to produce what he calls a matrix paper. It's a single page that provides some brief background at the top, then three ups and three downs about the initiative; on the back of the sheet the employee must recommend a course of action. Arthur C. Martinez, chairman and CEO of Sears, liked the technique so much that he encouraged other departments at Sears to adopt it.

—D. Duffy



Pagonis brings military rigor to Sears' logistics.

Although Sears won't attach a dollar figure to the savings gained by EHDS, the system has yielded some clear benefits. Since implementing EHDS, Sears has been able to consolidate its 46 home delivery service centers into just 12. Each vehicle now makes as many as three more stops per day, allowing Sears to minimize third-party carrier costs even when delivery orders have gone up. Most important, the company's ontime performance has gone from 78 percent to more than 90 percent, and customer satisfaction rates have increased from 84.7 percent to 87.4 percent.

Based on the success of EHDS, Sears has deployed a similar system to dispatch the company's fleet of appliance repair personnel. The system has led to striking improvements in technician productivity. Because drive time has been reduced by 6 percent, more calls can be completed and overtime has been

Sears' ontime delivery performance has gone from 78 percent to more than 90 percent.

reduced by 15 percent. Tellingly, the revenues from paid service calls have increased by an impressive 16 percent.

Despite the positive results, fierce competition in retail forces the logistics group to continue to innovate. Pagonis and Miller are aiming for a one-hour delivery window and the ability to dynamically route products. As soon as a customer makes a purchase in a store or on Sears' Web site, information about the order will be relayed instantly to the nearest distribution center; the product will automatically begin its journey so that it will arrive at the appropriate satellite delivery center in time to be loaded

on the local delivery truck on the delivery date that the customer has selected. Sears is also in the process of rolling out the first phase of its new dynamic load building and routing system, which will speed the delivery process even further. It will optimize the routing of trucks from

main distribution centers to satellite centers and tell warehouse personnel how each truck should be loaded depending on the delivery schedule.

Customers are happier and management is pleased with the results that the logistics system is getting for the company. But Pagonis persists, looking for new ways he can improve the customer's experience with Sears. Perhaps humility is the secret. "We don't think we're all that good," insists Pagonis. "We still want to strive to be better." **CIO**

Staff Writer Daintry Duffy can be reached at dduffy@cio.com.

ON MAY 4th INTERMEDIA COMMUNICATIONS
(NASDAQ:ICIX) NEEDED 6 SCARCE
COMPAQ PROLIANT STORAGE SYSTEMS.

NONE OF THEIR RESELLERS COULD FIND THEM.

WE DID.

We're Amherst — corporate America's leading technology reseller. In seconds, our "chew-through-walls" sales professionals can tap into the world's most powerful multi-vendor technology database and access over 200,000 computer products from more than 3,000 manufacturers. A \$4 billion inventory — over 3 times that of our nearest single-source competitor. We're corporate America's secret weapon. We will find what you thought couldn't be found.

AMHERST
CORPORATE COMPUTER SALES & SOLUTIONS™

SEND US YOUR BACKORDER LIST TODAY

YOUR SECRET
WEAPON

Amherst Corporate Computer Sales & Solutions and the Amherst Corporate Computer Sales & Solutions logo are trademarks of Amherst Technologies, L.L.C. Compaq and the names of Compaq products referenced herein are either trademarks and/or service marks or registered trademarks and/or service marks of Compaq Computer Corporation. All trademarks and registered trademarks are used to benefit and without intent to infringe on the mark holder. ©1999 Amherst Corporate Computer Sales & Solutions.

visit www.yoursecretweapon.com
or email yoursecretweapon@amherst1.com

1 (888) 910-6296

CIO Portfolio

PRODUCTS AND SERVICES FROM CIO COMMUNICATIONS

IN FUTURE ISSUES

Corporate Agility

The ability to respond at lightning speed to industry changes is vital in today's economy, but not every CIO realizes what an integral role IT plays in keeping the enterprise nimble. When it comes to agility, these IT departments "get it."

Plan Your IT Initiatives Now

As a CIO, long-range planning, including handling user requests and implementing technology, is becoming an important part of your job. Read a roundtable discussion with five leading IT executives who can advise you on how to do it well.

EXECUTIVE PROGRAMS

Anatomy of IT Partnerships: Exploring the Heart of the Enterprise

Oct. 3-6, 1999 • Hyatt Grand Cypress • Orlando, Fla.

Take the pulse of your organization at the next CIO Perspectives conference. The globalization of markets, technological advancements and new market opportunities are changing your organization's ability to compete alone. Join other CIOs, CIO and our corporate hosts to dissect successful IT relationships.

Contact CIO at 800 366-0246 or www.cio.com/conferences.

THE CIO CONSULTWARE SERIES

IT STANDARDS STRATEGIES FOR CIOs, V. 2.0

Our newest release examines current trends and practices for evaluating, setting, publicizing, implementing, monitoring and updating standards. Price: \$2,295

IT STAFFING STRATEGIES FOR CIOs

Learn how leading companies recruit, develop and retain IT staff successfully. Price: \$1,995

IMPLEMENTING IT STRATEGIES FOR CIOs

Shorten the planning cycle and create a process that works for your entire organization. Price: \$2,295

For more information or to demo these products, visit www.cio.com/consultware or contact Dot Caspersen at 800 726-3090 or research@cio.com.

cio.com
<http://www.cio.com>

The Research Starts Here

The CIO Executive Research Center

www.cio.com/forums/executive

This center contains information and insights about the role of the CIO.

Knowledge Management Research Center

www.cio.com/forums/knowledge

Find out how to learn what other people in your organization know.

Human Behavior and the Web

www.cio.com/forums/behavior

Does technology change the way people act in the workplace?

ERP Research Center

www.cio.com/forums/erp

Learn how ERP and supply chain management help integrate companywide information.

Infrastructure Research Center

www.cio.com/forums/infrastructure

Information and articles on hardware, software, operating systems and platforms.

SPEED UP YOUR SEARCH

www.masg.com

Find, Compare and Evaluate Software Faster, Smarter and More Efficiently

Now available on the Internet, the MEA Software SelectionqTool is the most powerful resource tool for prospective software buyers in the manufacturing marketplace for solutions such as:

- ERP, Supply Chain, Business Planning/Financials, Manufacturing management
 - Plant Floor Automation (MES, SCADA, HMI, PC Controls, Quality)
 - Computerized Maintenance Management Systems (incl. Asset Management)
 - Create system specs to compare systems that best match your requirements, develop a short list of suppliers, and issue customized RFPs quickly and easily.
 - Includes 70 application areas, comprehensive descriptions of 600+ systems and suppliers, 10,000+ functional areas, 10,000+ vendor spec, and instant updates for the most current supplier and system info.
- For more information, visit our website at www.masg.com or call 800-647-1908.

**Search Vendor Profiles, see application areas listed, order online or for more info,
visit our Web site at www.masg.com. Or call 800-647-1908.**



Index

Page numbers refer to the first page of the article(s) in which the company is mentioned. This index is provided as a service to readers. The publisher does not assume any liability for errors or omissions.

Company Index

Adecco SA	14
Beneficial Savings Bank	26
Brint LLC	14
Chase Bank of Texas	26
Cisco Systems Inc.	82
Deloitte Consulting	56
Dupont and Co.	44
Ernst & Young LLP	14, 56
Fedders Corp.	24
Ford Motor Co.	56
H.E. Butt Grocery Co.	26
IDB Holding Corp. Ltd.	44
KPMG LLP	56
Magnatek Inc.	56
Nabisco Inc.	56
Nestlé SA	56
Newbridge Networks Corp.	82
NIBCO Inc.	44
Nortel Networks Corp.	82
Olympus America Inc.	56
Outsourcing Solutions Inc.	44
PricewaterhouseCoopers LLP	56
Sears, Roebuck and Co.	74
Statoil AS	56
Wegmans Food Markets Inc.	56

Advertiser Index

*Denotes Section 2 Advertisers

Agilent Technologies	C2, 2, 4
Aladdin Knowledge Systems	79
Alpha Processor	15
American Power Conversion	67
Amherst Corporate Computer Sales & Solutions	77*
AppNet Systems Inc.	55*
Bell Atlantic (Regional)	35*
Cable & Wireless	53*
Cabletron Systems Inc.	37
Cerebellum Software	69*
CIO Communications Inc.	17*, 49*, 62, 66*, 81*
Cisco Systems Inc.	7
Citrix Systems Inc.	23
Cognos Inc.	39*

Compaq Computer Corp.	C2*, 59, 73*, 81
Computer Associates Intl. Inc.	C4, C4*, 7
Control Data Corp.	18
Corel Corp.	91
CSC	3*
CTIA	19
Dell Computer Corp.	19*, 28 (Regional)
Digex	71*
DLTape Systems	25*
Ericsson Wireless Office	61*
Ernst & Young LLP	12
Facetime Communications Inc.	15*
Fujitsu Ltd.	83
Gateway	34
Genesys Telecommunications	55, 57
Great Plains Software	11
GTE Corp.	21*
Hewlett Packard Co.	12*, 20
Hirsch Electronics	67*
IBM Corp.	65*, 69
IDG	29
IFsec, LLC	45
Inacom Corp.	46
infoUSA	49
Infonet Services Corp.	75*
INS	Flap, 40*
Intel Corp.	39
Inxight	23*
Kronos Inc.	85
Liebert Corp.	33*
Lockheed Martin Corp.	51
Lucent Technologies	61
Managing Automation	79*
Marimba Inc.	71
Mega Int'l USA Inc.	77
Mercury Interactive	33
Nortel	27
PeopleSoft Inc.	7*
Powerware Corp.	31*
Primavera Systems Inc.	47*
Princeton Softech Inc.	43*
PSI	89
Rational Software Corp.	C3
Remedy Corp.	11*
reSource Partners	51*
Right Now Technologies	C3*
SAS Institute Inc.	57*
SDRC	9
Serena Software	9*
Siebel Systems	59*
Sprint	73
Storagetek	25
Sun Microsystems Inc.	43
Syntel	87
Tech Corp.	35*
Tenfold Corp.	31
Toshiba America Inc.	4*
Vantivew Corp.	29*
Veritas Software	75

CIO SALES OFFICES

Publisher

Gary J. Beach • 508 935-4202

Senior VP / Sales

Michael J. Masters • 973 244-5500, Ext. 21

EAST COAST

VP / Business Development

Frank S. Genovese • 973 244-5500, Ext. 19

Business Development Analyst

Carrie Cerullo • 508 935-4678

Regional Managers / Advertising Sales

Eileen P. Lobaugh • 973 244-5500, Ext. 18

Kathy Powers • 973 244-5500, Ext. 14

Account Executive

Ellie Schwab • 973 244-5500, Ext. 16

Senior Sales Associates

Joan Bonadeo • 973 244-5500, Ext. 17

Marlene Levis • 973 244-5500, Ext. 15

Advertising Sales Associate

Angela Fung • 973 244-5500, Fax 973 227-1565

NEW ENGLAND

Regional Manager / Advertising Sales

Len Ganz • 508 935-4039

Senior Sales Associate

Stephanie Roy

508 935-4092, Fax 508 872-0618

MID-ATLANTIC

Regional Manager / Advertising Sales

Louise Cupelli • 215 625-9042, Fax 973 227-1565

SOUTH CENTRAL

Regional Manager / Advertising Sales

Robert E. Sawdon

Advertising Sales Associate

Sandra Beckmeier

512 306-9801, Fax 512 306-9805

NORTH CENTRAL

Regional Manager / Advertising Sales

Keith H. Kenner

Senior Sales Associate

Anne Swartz • 847 441-5005, Fax 847 441-5150

WEST COAST

Regional Director / Advertising Sales

Richard Bastas • 415 693-1988

Regional Managers / Advertising Sales

James Barrett • 415 693-1995

Paula J. Connor • 415 693-5634

Account Executive

Lucia Bravo • 415 693-5583

Senior Sales Associate

Sylvia Weiler • 415 693-5632

Advertising Sales Associates

Allison Pierce • 415 693-5630

Sarajane Robinson-Retondo

415 693-1993, Fax 415 398-4649

SOUTHERN CALIFORNIA

Regional Manager / Advertising Sales

Nancy A. Coy

Senior Sales Associate

Janis Wikander • 949 475-5579, Fax 949 475-5583

LIST SERVICES

List Services Manager

Kathryn A.W. Grayson • 508 935-4072

List Services Sales Associate

Amy McCabe • 508 935-4151

800 859-5478, Fax 508 872-8506

ONLINE SERVICES

VP / Online Sales

Lisa Brown • 508 935-4470

Online Sales Associate

Michael McPhee • 508 935-4611

CUSTOM PUBLISHING

VP / General Manager

Ellen Romanow • 508 935-4796

For further sales information, visit

www.cio.com/marketing/salesoffices.html

"THIS PRODUCT BELONGS IN THE HANDS
OF IT EXECUTIVES EVERYWHERE..."



MANAGING THE IT HUMAN RESOURCE *Successfully*

IT Staffing Strategies for CIOs

Innovative research conducted by the authors of the CIO ConsultWare Series provides answers and solutions on managing the IT human resource successfully. Our research is based on the management practices of 50 high-performance companies, expertise from innovative consultants, and three in-depth case studies on unique approaches that give you a solid foundation for recruiting, retaining and developing a strong IT staff.

For \$1,995, you'll receive:

- ▶ A 95 page benchmarking report.
- ▶ A CD-ROM (and diskettes) containing 400+ pages of value-added intellectual capital—including tested and proven models, methods, and practices drawn from the actual experiences of leading companies; a "ready-to-go" PowerPoint presentation of data and analysis for presenting to peers and executives; and customizable reports, memos and presentation templates in electronic format.



For more information or to download a demo, visit our Web site at www.cio.com/consultware.

To order any CIO ConsultWare Series research products, contact Dot Caspersen at 508 935-4040 or email your inquiry to research@cio.com.

CIO ConsultWare is produced jointly by CIO Communications and ICEX, an independent research firm.



PEER PRODUCT REVIEW

"IT staffing strategies for CIOs is the most comprehensive and organized presentation of ideas for managing IT human resources I have seen anywhere. It is clearly written and presented; has graphics that are understandable and suitable for presentations; has analyses that focus squarely on the issues; and it provides information and resources you can take action on immediately.

"With today's staffing challenges, this CIO ConsultWare product really belongs in the hands of IT executives everywhere. We may not be able to fix the IS staffing crisis, but at least with products like these, we can level the playing field considerably."

Angelo Privitera
CIO
HDR, Inc.

What Is ATM?

YOU'LL BE HEARING A LOT ABOUT ATM in the not-so-distant future, but the bulk of the coverage won't be about those money machines located outside banks and in malls. ATM, or asynchronous transfer mode, is destined to be the preferred network protocol for piping data, voice and video over corporate networks. Make no mistake: It's technologically complicated, and it's not cheap. But it promises high speed, high quality and high reliability, a tall order in today's world of bandwidth-hogging multimedia transmissions.

What makes ATM different?

Say you've got a real-time sound and video clip along with some data. Whereas the nimbler data can handle the clogged highways of a company network (where bandwidth is at a premium and speeds are erratic), voice and video cannot. As a result, video and sound come through as garbled and unintelligible, making users ornery.

Enter ATM. ATM uses packet-switching and multiplexing technologies that transform the data, sound and video into a single entity called a cell. When a cell is ready to go, it hops on its predetermined route and heads out onto the network at a very high speed. There are few, if any, unauthorized stops or delays.

Buzzwords

LAN and WAN (local area network and wide area network):

A LAN is a communications network used within a defined geographic area (typically a single office or building), comprising workstations, servers and the like. A WAN typically connects a bunch of LANs over a geographically dispersed area. WANs use different network technology from LANs because of the distances involved.

Ethernet: One of the most common standards of transmitting data over a LAN.

Bandwidth can range from 10Mbps (million bits per second) to 1,000Mbps (called a Gigabit Ethernet).

Frame Relay: A high-speed, scalable, packet-switching protocol for WANs that can send both data and images. It has bandwidth of 44.736Mbps but isn't well suited for real-time voice and video.



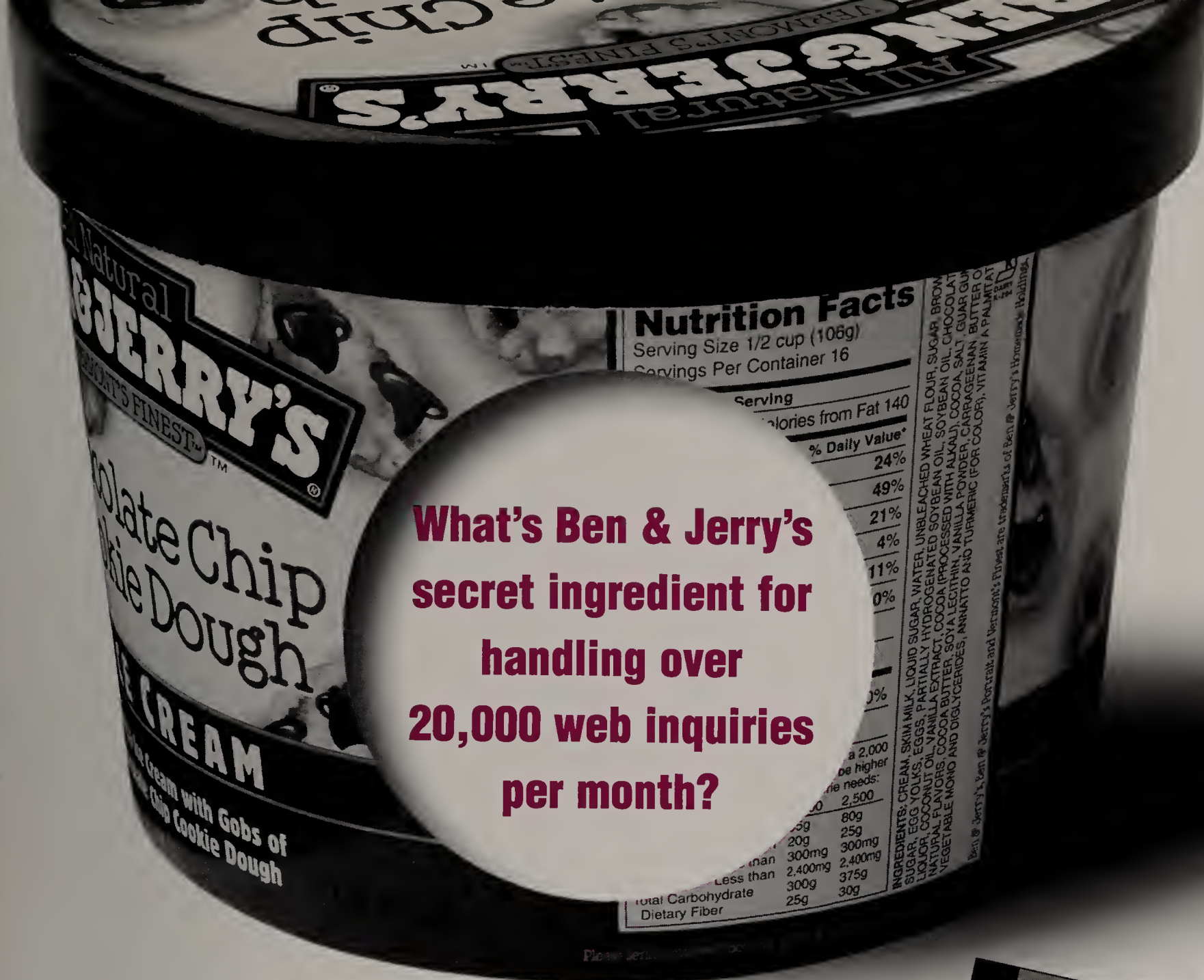
What kinds of networks are we talking about here?

ATM works on a number of corporate networks. ATM is most commonly deployed on wide area networks, or WANs. On a WAN, where network traffic is often intense, ATM can help turn the rush hour congestion into a 10 a.m. commute. ATM also works on local area networks (LANs) and enterprise-level networks. On LANs, ATM faces competition from the dominant Ethernet protocol; on enterprise-level networks, frame relay is its closest rival (see Buzzwords, left). High-performance ATM switches make the connections between different networks. Some of the companies offering ATM technology these days are Cisco Systems Inc., Newbridge Networks Corp. and Nortel Networks Corp.

Who is using ATM?

Companies that depend upon fast and worry-free delivery of high-end, multimedia transmissions are using ATM. For example, hospitals use the technology to transmit medical images and video. Companies with dispersed offices wanting high-quality videoconferencing and multimedia presentations are also benefiting from ATM. However, companies should consider ATM's high price tag and technical complexity before jettisoning existing protocols for ATM.

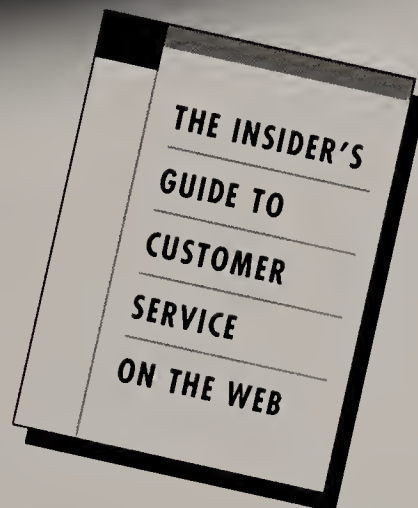
—Tom Wailgum



**What's Ben & Jerry's
secret ingredient for
handling over
20,000 web inquiries
per month?**

The answers are yours, FREE.

Visit www.rightnowtech.com/whitepaper
and download this FREE guide
to e-service on the Web.



Over 350 of the world's leading companies have chosen e-service solutions from Right Now Technologies. Learn how this technology has helped enhance customer satisfaction while actually lowering the cost of customer support. Great customer service on the web is now easy, effective and affordable. See for yourself. **FREE.** Download our white paper "The Insider's Guide to Customer Service on the Web," or call **1-888-858-1847.**



Predict The Future, And You Can Change The World. With NEUGENTS, You Can Do Both.



Introducing software that can emulate a human brain.

It's true. Neugents™ think like a human — only faster.

Neugents compute not in thousandths of a second, but millionths. Without emotion, subjectivity, or bias.

Neugents can analyze, make decisions, take action. They can process massive amounts of chaotic data and instantly identify complex patterns and relationships. Figuring out why things happen, and more importantly, predict what will happen next.

Neugents can learn. Using a unique self-learning algorithm, Neugents get smarter every second, every hour, every day.

The secret is Neural Network Technology. Computer Associates has taken this powerful technology and turned it into a patented application that goes far beyond traditional forecasting methods and rules-based applications.

Neugents can tell you what your sales are going to be next week, next month, or next year. They can tell you before your next product fails — and why. And for enterprise management, Neugents can do everything from warn you before a server goes down — or tell you when and where your next security breach will occur.

With virtually every aspect of your business, Neugents can accurately and consistently predict the future.

And when you can predict the future, you can not only change the future, you can change the world.

Call 1-877-Neugents for more information.

NEUGENTS™ Software That Can Think.™

**COMPUTER
ASSOCIATES®**
Software superior by design.